



Hydromorphology Assessment Owenkillew and Owenreagh Rivers

Gortin, Co. Tyrone, Northern Ireland

Dalradian Gold Ltd

Omagh, Co. Tyrone

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Basis of Report

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Acronyms and Abbreviations

DGL	Dalradian Gold Ltd.
EA	Environment Agency (UK)
EPA	Environmental Protection Agency
ES	Environmental Statement
OSNI	Ordnance Survey of Northern Ireland
PRONI	Public Record Office of Northern Ireland
RHAT	River Hydromorphology Assessment Technique
WFD	Water Framework Directive



1.0 Introduction

This Hydromorphology Assessment is based on a fluvial geomorphology baseline audit survey was undertaken in January 2016 and August 2025 along representative sections of the Owenkillev and Owenreagh rivers, within the study area. The study area is set out in the 2017 Environmental Statement (ES) for the project.

1.1 Hydromorphology Assessment

The audit survey of the river geomorphology and hydromorphology assessment was undertaken in order to establish the existing baseline channel and floodplain conditions along the two river channels in the study area. The baseline audit also provides a record of the Fluvial Geomorphology along the study reaches against which future changes can be assessed, including those which may, or may not, be as a result of the proposed development.

The survey methodology is presented in SLR Report EIA Baseline Data Collection Soils and Geology: Fluvial Geomorphology Baseline Audit methodology.

Geomorphology is the science of landforms including their origin, evolution and form, resulting from erosion and depositional processes, and their distribution across the earth's surface. An integral part of geomorphology is an understanding of the processes which produced the landforms, which includes flowing water. The Fluvial Geomorphology is the product of several geological and hydrological factors, the principal of which relate to the sediment and flow characteristics and their interaction, which govern the resultant morphology. The fluvial geomorphology includes the channel and floodplain morphology and processes, and the fluvial geomorphological system.

The field surveys were undertaken on the 21st and 22nd January 2016 and on the 5th, 6th and 7th August 2025.

2.0 Historical Channel Maintenance Works

Channel works have been carried out historically on the Owenkillev and Owenreagh river channels as part of maintenance activities which were undertaken as part of the Rural Improvement Campaign in the 1970's and the 1980's (Department for Infrastructure Rivers, communication dated the 20th June 2022).

2.1 Owenkillev River Works

Improvement works were undertaken on the Owenkillev River from Crouck Bridge down to the confluence with the Owenreagh River. The works were recorded as being undertaken between 1971 and 1987 and involved the excavation and removal of gravels (shoals) from the riverbed, which were recorded as being used for flood bank construction, the construction of laneways and for the filling hollows on neighbouring lands.

The location details of the works undertaken is not specific, owing to the nature of the records provided, but the removal of gravels from the Owenkillev River is recorded as being:

- downstream of the Owenkillev / Owenreagh confluence;
- at the confluence of the Owenkillev / Owenreagh;
- downstream of Glenlark Burn; and
- both downstream and upstream of Crouck Bridge.

Available desktop historical mapping from the Public Record Office of Northern Ireland (PRONI) and the Land and Property Services (www.spatialni.gov.uk) was accessed and reviewed as part of this hydromorphology assessment. The available historical mapping from 1829 to 1862 for the Owenkillev River channel planform, shows sections of braided river channel with gravel bars and islands within the channel between Monameal Bridge and the Starres nr. Gortin village, none of which exist at the present day.

2.2 Owenreagh River Works

Improvement works were undertaken on the Owenreagh River from Cashel Bridge to downstream of Aughnamirigan bridge. The works were recorded as being undertaken between 1971 and 1987 and involved the excavation and removal of gravels (shoals) from the riverbed as well as silt and weed removal. The gravels and material removed from the channel were recorded as being used for flood bank construction, bank stabilisation, the construction of laneways, use in farmyards and for the filling hollows on neighbouring lands.

The location details of the works undertaken is not specific, owing to the nature of the records provided, but the removal of gravels from the Owenreagh River is recorded as being:

- downstream of Cashel Bridge; and
- along the Owenkillev River channel in the vicinity of Glensawisk Burn and Aughnamirigan Bridge.

Available desktop historical mapping from the Public Record Office of Northern Ireland (PRONI) and the Land and Property Services (www.spatialni.gov.uk) was accessed and reviewed as part of this hydromorphology assessment. The available historical mapping from 1829 to 1862 for the Owenreagh River channel planform, shows sections of braided river channel with gravel bars and islands within the channel between Cashel Bridge and the Owenkillev River, none of which exist at the present day.

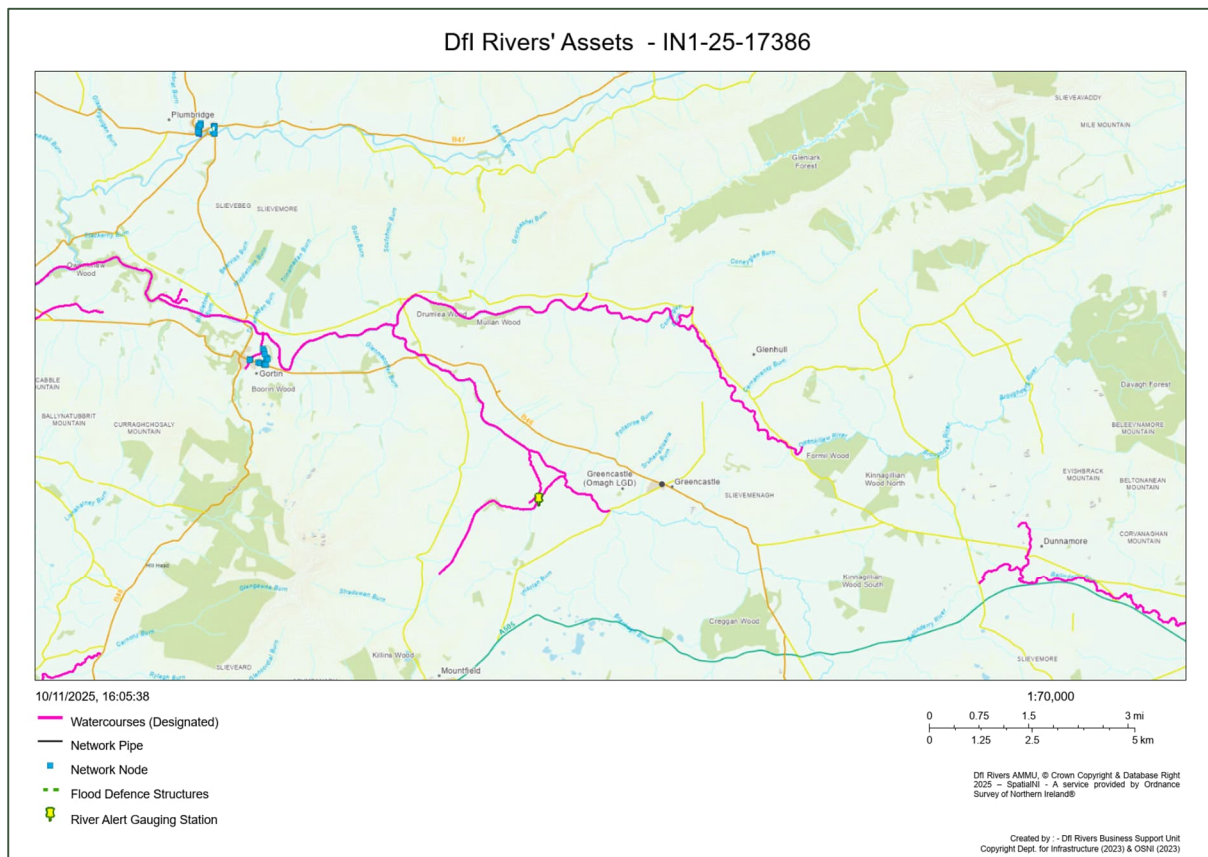
3.0 River Channel Designated Status

The Department for Infrastructure (DfI) Rivers Directorate Asset Management Unit was consulted as part of a review of available information on the Owenkillev River and the Owenreagh River.

The DfI state that sections of the Owenkillev and Owenreagh River channels are designated under the Drainage Order (Northern Ireland) 1973, see Figure 1 below. Designated watercourses have been approved for maintenance by the Drainage Council for Northern Ireland.

The designated watercourses along the Owenkillev and Owenreagh are scheduled for a three or six year inspection cycle and maintenance is carried out when works are identified. The purpose of the inspection and maintenance works for designated watercourses is to ensure that they are free of obstructions and are in a free-flowing state.

Figure 1: Owenkillev and Owenreagh Designated Watercourses



4.0 Methodology

This section details the baseline geomorphology audit, including:

- Guidance for baseline audit;
- Baseline audit methodology;
- Study reaches and extent of baseline audit;
- Walkover survey and scope; and
- Field records.

4.1 Audit Guidance

The walkover survey and baseline audit was undertaken with due regard to the relevant Northern Ireland Environment Agency (NIEA) and England & Wales Environment Agency (Environmental Agency) Guidelines on Hydromorphology and Fluvial Geomorphology.

The relevant guidance documents for this baseline audit were:

- NIEA (2014), River Hydromorphology Assessment Technique (RHAT) Training Manual Version 2;
- Environment Agency (2010), Fluvial Design Guideline Manual II; and
- Environment Agency (2003), Guidebook on Applied Fluvial Geomorphology: Technical Report FD1914.

The NIEA RHAT guide was developed for the purpose of Water Framework Directive (WFD) assessment for river status and compliance for habitats (ecological based) in Northern Ireland. It provides relevant guidance for undertaking Hydromorphology (Fluvial Geomorphology) audits.

4.2 Baseline Audit Methodology

Within the study area, the Owenkillev River study reach is from Crockyneill to Gortin bridge, while the study reach for the Owenreagh is from Formil Bridge to the confluence with the Owenkillev River.

Representative sections of the study reaches were selected for the baseline audit, including sections where there is a change in channel or floodplain morphology or locations of channel erosion or deposition, and sections which coincide with surface water flow monitoring locations. Aerial images of both rivers were also viewed online prior to the site visit to understand the river geomorphology before the walkover survey.

The length of the representative sections will be approximately 40 m x channel width (W), in line with River Hydromorphology Assessment Technique guidance¹.

4.3 Walkover Survey

The Fluvial Geomorphology baseline audit was undertaken by means of a walkover survey of the reaches.

The scope of the baseline audit of the Fluvial Geomorphology included river channel morphology and associated floodplain morphology, where present. The walkover survey

¹ Northern Ireland Environment Agency (2009), River Hydromorphology Assessment Technique (RHAT) Training Guide

covered the river channel and floodplain fluvial geomorphological system and the identification, description and qualitative assessment of the:

- River channel plan form;
- Floodplain morphology;
- Channel bed and channel bank;
- Channel substrate (bedload) where visible;
- Channel erosion & deposition;
- Channel dynamics (channel change including historical change); and
- Identification of human impacts including weirs, channel modifications and bank protection measures etc.

4.4 Field Records

A field record sheet was completed for each representative section as a record of the audit findings.

Each field record sheet was used to record field observations, which include the following:

- Channel morphology type;
- Evidence of channel bank instability and its possible causes;
- Channel sedimentation;
- Evidence of human impacts and structures and degree of natural recovery;
- Any effects of vegetation and debris;
- Maintenance activities and requirements; and
- Protection and enhancement value

The walkover survey field record sheets for the 2016 survey are included in the 2017 Environmental Statement. The walkover survey field record sheets for the 2025 survey for the Owenkillev River and the Owenreagh River are included in Appendix B and Appendix C respectively.

4.5 River Hydromorphology Assessment Technique

The River Hydromorphology Assessment Technique (RHAT) scores the attributes of the river geomorphology between 0 and 4 depending on the degree of naturalness. The attributes scored are:

- Channel form and flow type;
- Channel vegetation types;
- Substrate bedload condition;
- Barriers to continuity;
- Bank structure and stability (Left Bank & Right Bank);
- Bank vegetation (Left Bank & Right Bank);
- Riparian land cover (Left Bank & Right Bank); and
- Floodplain connectivity (Left Bank & Right Bank).

Each of the above attributes are scored based on findings from the baseline walkover audit survey.

The RHAT scoring system provides a score for the hydromorphology of the river channel across five classes ranging between High and Bad. The hydromorphology scoring is based on a qualitative assessment in the field, the scoring system is detailed in the RHAT (NIEA, 2014).

5.0 Hydromorphology Assessment

The fluvial geomorphology along the Owenkillev and Owenreagh rivers was assessed at thirteen field sites; six sites on the Owenkillev River and seven sites on the Owenreagh River, see Appendix A. The baseline audit field survey data sheets for the fluvial geomorphology, along with site photographs for the 2025 survey are shown in Appendix B and Appendix C.

The results of the fluvial geomorphology baseline audit are presented here as a River Hydromorphology Assessment Technique (NIEA, 2014), where the quality of the river geomorphology is scored based on the degree of naturalness, reflecting the degree of human impact on the river geomorphology.

5.1 River Hydromorphology Results

The river hydromorphology assessment scores for the 2025 Owenkillev and Owenreagh river survey reaches are shown in Table 1 and Table 2 respectively.

The WFD hydromorphology scores indicate that the Owenkillev River is classified as Poor to Moderate while the Owenreagh is classified as Poor to Moderate with one location, Site 10 being classified as Bad. The hydromorphology classification of the channels from reflects the degree of human impacts on the river channel and indicate that the hydromorphology is not considered to be particularly natural.

The river hydromorphology assessment scores for the study reaches along each of the burns is shown for:

- Owenkillev - Table 1; and
- Owenreagh - Table 2.

The WFD Hydromorphology classification scheme is shown in Table 3 below.

Table 1: Owenkillev Hydromorphology Scores and WFD Class

Study Reach	Hydromorphology Attribute Total Score	Hydromorphology Score	WFD Hydromorphology Class
Site 1	12	0.38	Poor
Site 2	14	0.44	Moderate
Site 3	15.5	0.48	Moderate
Site 4	11	0.34	Poor
Site 5	9	0.28	Poor
Site 6	15.5	0.48	Moderate

Table 2: Owenreagh Hydromorphology Scores and WFD Class

Study Reach	Hydromorphology Attribute Total Score	Hydromorphology Score	WFD Hydromorphology Class
Site 7	17	0.53	Moderate
Site 8	10.5	0.33	Poor
Site 9	12	0.38	Poor
Site 10	8	0.25	Poor
Site 11	8	0.25	Poor
Site 5b	11	0.34	Poor

Table 3: WFD Hydromorphology Score and Classification Scheme

Σ Hydromorphology Attribute Scores	Hydromorphology Score ¹	WFD Hydromorphology Class
≥ 26	≥ 0.8	High
≥ 19.5 to < 26	$0.6 - < 0.8$	Good
≥ 13 to < 19.5	$0.4 - < 0.6$	Moderate
≥ 6.5 to < 13	$0.2 - < 0.4$	Poor
< 6.5	< 0.2	Bad
¹ Hydromorphology Score = Σ Attribute scores/32		

5.2 Hydro Characteristics

A Surface Water Impact Assessment² (SWIA) has been undertaken for the project and was submitted as part of the Second Addendum to the ES.

The purpose of the SWIA was to calculate the impact of the Project on surface water flows and surface water quality in watercourses potentially affected by the Project. The study included an assessment of the existing flow regime in the Owenkillev and Owenreagh Rivers, which are summarised from the SWIA here in Table 4 below.

Table 4: Summary flow characteristics in Burns from SWIA

Burn	Catchment Area	95%ile annual low flow	Annual Average Flow	2-year flood flow
Owenkillev River (SWA3) upstream of confluence with Owenreagh River	139.9 km ²	0.92 m ³ /s	4.55 m ³ /s	102.4 m ³ /s
Owenreagh River (SWA2) upstream of confluence with Owenkillev River	85.5 km ²	0.56 m ³ /s	2.37 m ³ /s	62.6 m ³ /s

² Environmental Statement - Volume 3, Appendix C4 Surface Water Impact Assessment (November 2017).

5.3 Discussion

Human influences on the fluvial geomorphology of the Owenkillev and Owenreagh rivers has meant that the hydromorphology of the Owenkillev River survey reaches has been classified as Poor to Moderate, while the Owenreagh River survey reaches have been classified as Poor between Cashel bridge and the confluence with the Owenkillev River.

The Owenkillev and Owenreagh rivers are predominantly gravel bed rivers with some small areas of outcropping bedrock in the channel. The presence of glaciofluvial outwash deposits on the floor of the valleys has provided a source of gravel bedload material for the rivers; this gravel material has been reworked, through scour and erosion, by the rivers since the end of the last glaciation.

The channel morphology of the rivers is predominantly Pool-Riffle-Glide sequence which is typical of the lower gradient valley floor channel type channel of these sections of river. Short reaches of Cascade / Step Pool channel were recorded in the steeper river gradient section at Site 7 on the Owenreagh River.

The river channels have been straightened, deepened and the channel banks protected with stone and vegetation which has prevented natural river channel erosion and deposition processes. Historical channel modifications were undertaken as part of the Rural Improvement Campaign carried out in the 1970's and 1980's.

Channel modification and protection of channel banks means that the natural river channel geomorphological processes of erosion, sedimentation and floodplain interaction and the hydromorphology has been altered. The effect of the channel bank works has been to protect farmland on the valley floor from erosion which has prevented the natural development and evolution of the river channel from flood flows.

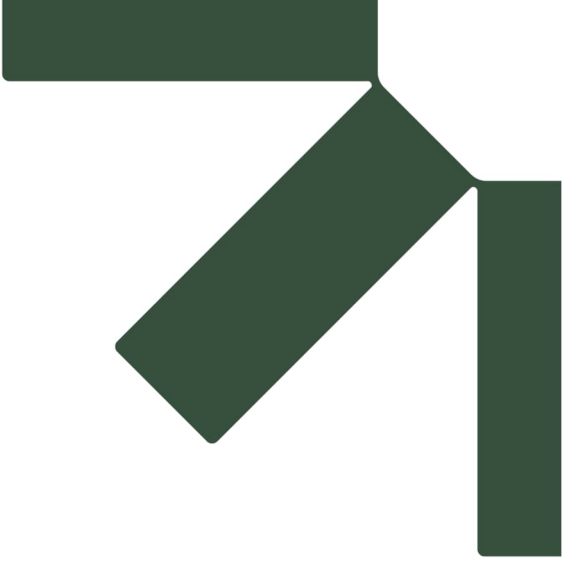
The combination of channel modification and bank protection measures has resulted in a uniform channel shape, with a flat bed and steep near vertical channel sides. The channel modifications will have resulted in a more uniform flow and bedload distribution across the channels.

Agricultural land use, including pastoral grazing and arable land use, extends up to the river channel bank at almost all locations surveyed including across former floodplains with little natural riparian vegetation.

6.0 Hydromorphology Assessment Findings

Human influences on the Owenkillev and Owenreagh River channels has resulted in the hydromorphology of the river reaches assessed being classified as Poor to Moderate, based on the WFD hydromorphology classification system.

The Owenreagh and Owenkillev river channels have been straightened, deepened and the channel banks protected with stone and vegetation in order to prevent natural river channel erosion. The combination of channel modification and bank protection measures has resulted in a uniform channel shape, with a flat bed and steep near vertical channel sides. Channel modification has produced a relatively uniform flow and bed substrate distribution across the channel, which means that the channel has lost the natural variability of form and bedload which river channels display.



Appendix A River Hydromorphology Survey Sites 2016 and 2025

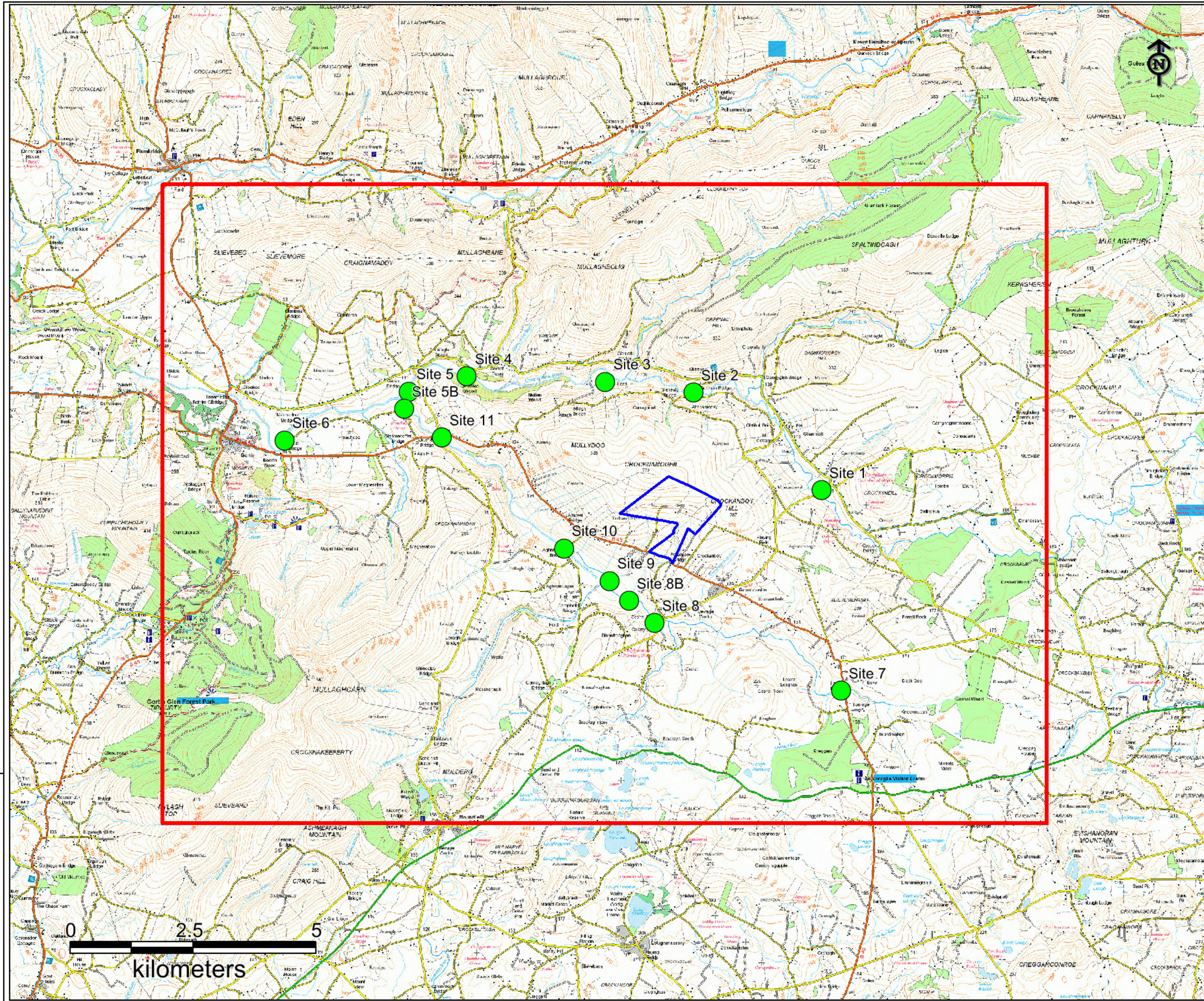
Hydromorphology Assessment Owenkillew and Owenreagh Rivers

Gortin, Co. Tyrone, Northern Ireland

Dalradian Gold Ltd

SLR Project No.: 501.065025.00001

24 November 2025



LEGEND

Fluvial Geomorphology

● FIELD SURVEY SITES

SOILS AND GEOLOGY EIA
BASELINE STUDY AREA

INFRASTRUCTURE AREA

Notes:
1. Extract from OSNI 1:50k Raster
Tiles 12, 13, 14, 20, 21 & 22.
2. OSNI Licence No. 64421. (c) Crown Copyright

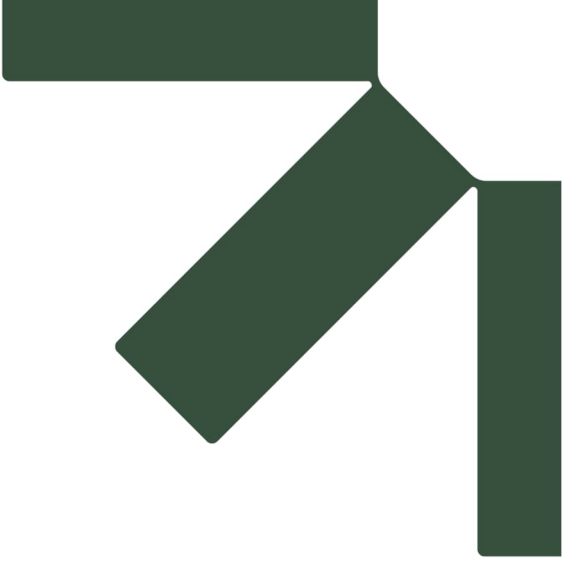
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CURRAGHINALT GOLD PROJECT

MINE EIA BASELINE
FLUVIAL GEOMORPHOLOGY
WALKOVER SURVEY SITES

FIGURE 5

Scale: 1:75,000 @A3 Date: SEPTEMBER 2016



Appendix B Owenkillew River Hydromorphology Field Sheets

Hydromorphology Assessment Owenkillew and Owenreagh Rivers

Gortin, Co. Tyrone, Northern Ireland

Dalradian Gold Ltd

SLR Project No.: 501.065025.00001

24 November 2025

Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 21st January 2016 and 5th August 2025

Owenkillew Reach 1 (400m): Owenkillew River downstream of Monanameal Br.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Riffle and Glide (no pools present). Wide valley floor and large channel meander bends with relatively low channel gradient. Clear evidence of alteration to course e.g. straightening of channel and/or channel cross section, or significant removal of natural features. Uniform flows across riffles and glides with minimal variation in flow depths and velocities.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	2		Limited in channel vegetation with rooted submerged plants with underwater leaves. Vegetation is sparse and poor quality with a limited range of RHAT vegetation types. Limited Woody Habitat present due to channel modifications and maintenance.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been altered, managed or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type. Good diversity of substrate for river type, with little fine sediment or silt deposited where not expected for type
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	3		Man made weir from large boulders has altered water levels across first 150 m downstream of bridge. Ford in middle of reach for farm access.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0		Extensive interference and modification of channel bank. Bank protected by rock armoring and planted trees. Planting of trees has stabilised the channel banks and along with boulder protection on the banks. No lateral channel migration.
	R = 0		Extensive interference and modification of channel bank. Bank protected by rock armoring and planted trees. Planting of trees has stabilised the channel banks and along with boulder protection on the banks. No lateral channel migration.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 1		c. 65-85% of the bank surveyed is covered by native vegetation with a range of canopy layers. Vegetation management is evident, but removal does not affect plant re-growth potential. Overhanging branches from the bank are sufficient to supply organic matter, WH and shading.
	R = 1		c. 65-85% of the bank surveyed is covered by native vegetation with a range of canopy layers. Vegetation management is evident, but removal does not affect plant re-growth potential. Overhanging branches from the bank are sufficient to supply organic matter, WH and shading.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone, human activities (agriculture with grassland) extends to the bank top over the length of the reach.
	R = 0		No riparian buffer zone, human activities (agriculture with grassland) extends to the bank top over the length of the reach.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0.5		Significant bank reinforcement, widening, over deepening that limits floodplain / channel interaction to 75% of the channel. Extensive floodplain across the wide valley floor. No evidence of recent out of channel flows (Jan. 2016).
	R = 0.5		Significant bank reinforcement, widening, over deepening that limits floodplain / channel interaction to 75% of the channel. Extensive floodplain across the wide valley floor. No evidence of recent out of channel flows (Jan. 2016).
Σ Attribute scores	12		
Hydromorphology Score	0.38		
WFD class ^c	Poor		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment – Photographs

Photograph Detail Sheet – Owenkillew River Hydromorphology (Okw. - S1)

River name and location: Owenkillew River, Co. Tyrone

Date: 21st January 2016 and 5th August 2025

Photograph 1:
Bank protection and riparian vegetation



Photograph 2:
Channel Bar and bank vegetation



Photograph 3:
Channel bedload and bank vegetation



Photograph 4:
In Channel vegetation



Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 21st January 2016 and 7th August 2025

Owenkillew Site 2 (reach c. 400m): Owenkillew River downstream of Greenen Br.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Riffle - Glide with some small pools present. Relatively straight channel with single large meander before confluence with Glenealy Burn. Bedload substrate comprises gravels, cobbles and small boulders. Gravels and cobbles on inside of meander bend with sand alluvium deposited on inside of bend also. Clear evidence of alteration to course e.g. straightening of channel and/or channel cross section, or significant removal of natural features. Uniform flows across riffles and glides with minimal variation in flow depths and velocities.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	2		Limited in channel vegetation with some rooted submerged plants with underwater leaves. Channel vegetation is sparse with a limited range of RHAT vegetation types. Limited Woody Habitat present due to channel modifications and maintenance.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been altered, managed or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type. Good diversity of substrate for river type, with little fine sediment or silt deposited where not expected for type.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No in artificial in channel barriers observed which would restrict channel flows.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0.5		Evidence of alteration to bank structure on ≤75% of the bank length. Bank protected with trees and boulders. Additional protection on outside of meander bend and bank is stable. Channel banks have largely been stabilised with planted trees.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
	R = 0.5		Evidence of alteration to bank structure on ≤75% of the bank length. Bank protected with trees and boulders. Some bank failure and small lateral erosion on inside of meander bend. Bank protection measures in places along channel. Channel banks have largely been stabilised with planted trees.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 1		c. 65-85% of the bank surveyed is covered by native vegetation with a range of canopy layers. Overhanging branches from the bank are sufficient to supply organic matter, WH and shading. Alien Species (Himalayan balsam) present along channel bank.
	R = 1		c. 65-85% of the bank surveyed is covered by native vegetation with a range of canopy layers. Overhanging branches from the bank are sufficient to supply organic matter, WH and shading. Alien Species (Himalayan balsam) present along channel bank.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone, human activities (agriculture with grassland) extend to the bank top over the length of the reach.
	R = 0		No riparian buffer zone, human activities (agriculture with grassland) extend to the bank top over the length of the reach.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0.5		Significant bank reinforcement, widening, over deepening that limits floodplain / channel interaction to 75% of the channel. Floodplain present on both channel banks and is c. 100m to 200m wide. Poorly drained farmland on either side of river, floodplain is better drained.
	R = 0.5		Significant bank reinforcement, widening, over deepening that limits floodplain / channel interaction to 75% of the channel. Floodplain present on both channel banks and is c. 100m to 200m wide. Poorly drained farmland on either side of river, floodplain is better drained.
Σ Attribute scores	14		
Hydromorphology Score	0.44		
WFD class ^c	Moderate		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenkillew River Hydromorphology (Okw. – S2)

River name and location: Owenkillew River downstream from Greenen Br., Co. Tyrone

Date: 21st January 2016 and 5th August 2025

Photograph 1:
Channel and bank profile with vegetation



Photograph 2:
Channel Bar and flow



Photograph 3:
Channel bedload and bank vegetation



Photograph 4:
Channel profile



Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 21st January 2016 and 7th August 2025

Owenkillew Site 3 (reach c. 400m): Owenkillew River downstream of Curraghinalt Burn.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Riffle and Glide with no pools present. Floodplain present on LHB only. Wide open valley floor on LHB. RHB is against valley side for approximately half of this reach. Bedload comprising gravels, cobbles and small boulders. Channel is c. 20m-30m wide and banks c. 2m in height. Gravels and cobbles on inside of meander bend with sand alluvium deposited on inside of bend also. No apparent recent lateral channel movement. Bedrock present in channel at mid-section of this reach on RHB. Channel bank protection on both banks. Clear evidence of alteration to course e.g. straightening of channel and/or channel cross section, or significant removal of natural features. Uniform flows across riffles and glides with minimal variation in flow depths and velocities.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	2		Limited in channel vegetation with some rooted submerged plants with underwater leaves. Channel vegetation is sparse with a limited range of RHAT vegetation types. Limited Woody Habitat present.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been altered, managed or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type with range of material. Good diversity of substrate for river type, with little fine sediment or silt deposited where not expected for type.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No artificial in channel barriers observed which would restrict channel flows.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0.5		Bank protected with trees and boulders. Bank is stable with planted trees and protection by boulders and channel bedload material. Evidence of alteration to bank structure on ≤75% of the bank length and stabilized with tree planting.
	R = 0.5		Channel banks have largely been stabilised with planted trees. Bank is stable and has been protected. There has been erosion of glacial till material in cliff face in recent past however channel now protected and no erosion and inputs at present. Evidence of alteration to bank structure on ≤75% of the bank length and stabilized with tree planting.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 1		c. 65-85% of the bank surveyed is covered by native vegetation with a range of canopy layers. Overhanging branches from the bank are sufficient to supply organic matter, WH and shading. Alien Species (Himalayan balsam) present along small sections of channel bank.
	R = 1		c. 65-85% of the bank surveyed is covered by native vegetation with a range of canopy layers. Overhanging branches from the bank are sufficient to supply organic matter, WH and shading. Alien Species (Himalayan balsam) present along small sections of channel bank.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone, human activities (agriculture with grassland) extend to the bank top over the length of the reach.
	R = 1.5		Limited riparian buffer where channel against valley side. Remaining sections no riparian buffer zone, human activities (agriculture with grassland) extend to the bank top over the length of the reach except for section of bank against valley side woodland.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0.5		Significant bank reinforcement and over deepening limits and prevents floodplain / channel interaction to 75% of the channel. Poorly drained farmland on either side of valley floor and floodplain is better drained.
	R = 0.5		Significant bank reinforcement and over deepening limits and prevents floodplain / channel interaction. Farmland on valley floor and floodplain is well drained.
Σ Attribute scores	15.5		
Hydromorphology Score	0.48		
WFD class ^c	Moderate		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenkillew River Hydromorphology (Okw. - S3)

River name and location: Owenkillew River downstream from Curraghinalt Burn, Co. Tyrone

Date: 21st January 2016 and 7th August 2025

Photograph 1:
Channel and bank with vegetation



Photograph 2:
Channel profile and landuse



Photograph 3:
Channel profile and bank vegetation



Photograph 4:
Channel riffle and bedload



Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 21st January 2016 and 5th August 2025

Owenkillew Site 4 (reach c. 400m): Owenkillew River at Scotch Town and Drumlea Woods.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Lowland meandering type morphology with some riffle and glide boulder present and weir in middle of reach. A pool has developed below the weir. Floodplain present on LHB only with wide valley floor and is relatively well drained. Section of RHB is poorly drained with multiple springs from the valley side; valley floor is marshy, extremely wet and is not in agriculture. Clear evidence of bank protection works to prevent erosion on LHB at the agricultural ford crossing point. Predominantly Uniform flows across channel profile with minimal variation in flow depths and velocities.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	2		Limited in channel vegetation with some rooted submerged plants with underwater leaves. Channel vegetation is sparse with a limited range of RHAT vegetation types. No Woody Habitat present.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been altered, managed or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type with range of material. Good diversity of substrate for river type comprising coarse gravels, cobbles and small boulders, with little fine sediment or silt deposited where not expected for type.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	2		The boulder weir has raised the water level upstream. There was a significant cascade at the weir under current flow condition (January 2016).

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 1		Bank protected with gravels and planted with few trees. Short section of bank was eroding upstream of the weir. Limited planting of trees to stabilise channel bank. Evidence of alteration to bank structure on ≤75% of the bank length and stabilized with tree planting.
	R = 1		Channel banks have been stabilised with planted trees.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0		Limited tree planting along bank with field to bank top. Alien Species (Himalayan balsam) present along sections of channel bank.
	R = 0		c. 65-85% of the bank surveyed is covered by native vegetation with a range of canopy layers. Overhanging branches from the bank are sufficient to supply organic matter, WH and shading. Alien Species (Himalayan balsam) present along small sections of channel bank.
7. Riparian land use L/R Desktop riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone, human activities (agriculture with grassland) extend to the bank top over the length of the reach.
	R = 0		Limited riparian buffer where channel against valley side. Remaining sections no riparian buffer zone, human activities (agriculture with grassland) extend to the bank top over the length of the reach except for section of bank against valley side marsh area.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0.5		Significant bank reinforcement and over deepening limits floodplain / channel interaction to 75% of the channel.
	R = 0.5		Significant bank reinforcement and over deepening limits floodplain / channel interaction.
Σ Attribute scores	11		
Hydromorphology Score	0.34		
WFD class ^c	Poor		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenkillew River Hydromorphology (Okw. – S4)

River name and location: Owenkillew River Scotch Town / Drumlea Woods, Co. Tyrone

Date: 21st January 2016 and 5th August 2025

Photograph 1:
Weir structure



Photograph 2:
Bank erosion (2016)



Photograph 3:
Channel bank protection and ford access with Himalayan balsam invasive species



Photograph 4:
Channel riffle and bedload with bank protection



Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 21st January 2016 and 5th August 2025

Owenkillew Site 5 (reach c. 400m): Owenkillew from Drumlea Road Bridge to Owenreagh Confluence.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Lowland meandering type morphology with some riffle and glide and pools. Wide open section of valley floor with former floodplain on either side of the channel. Farmland either side of channel is relatively well drained and is on gravels subsoils. Relatively straight channel across first part of this reach downstream of bridge. Embankment present along LHB of channel which prevents flooding of land. Channel has been excavated. Predominantly Uniform flows across channel profile with minimal variation in flow depths and velocities. Uniform channel cross section with box shaped profile with uniform channel flow. Channel is c. 2-2.5m deep to bankfull. Meander bend before confluence with Owenreagh channel where channel is asymmetrical with deeper channel on outside of bend (LHB) and shallow gravel bar on inside of bend (RHB)
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	1		Little in channel vegetation. Channel vegetation is sparse very little by way of macrophytes present. No Woody Habitat present.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been altered, managed or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type with range of material. Good diversity of substrate for river type comprising coarse gravels, cobbles and small boulders, with little fine sediment or silt deposited where not expected for type.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No barriers to continuity observed.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0		Some minor lateral erosion on bank with roots exposed. Erosion on outside of meander bend at downstream extent. Bank protected / stabilised with planted trees. Evidence of alteration to bank structure on ≤75% of the bank length and stabilized with tree planting.
	R = 0		Bank protected / stabilised with planted trees. Evidence of alteration to bank structure on ≤75% of the bank length and stabilized with tree planting.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0		Tree planting along bank with field to bank top. Alien Species (Himalayan balsam) present along sections of channel bank.
	R = 0		Tree planting along bank with field to bank top. Alien Species (Himalayan balsam) present along sections of channel bank.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone, human activities (agriculture with grassland) extend to the bank top over the length of the reach.
	R = 0		No riparian buffer zone, human activities (agriculture with grassland) extend to the bank top over the length of the reach.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0		Significant bank reinforcement and embankment with channel over deepening prevents floodplain / channel.
	R = 0		Significant bank reinforcement and over deepening limits floodplain / channel interaction.
Σ Attribute scores	9		
Hydromorphology Score	0.28		
WFD class ^c	Poor		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenkillev River Hydromorphology (Okw. – S5)

River name and location: Owenkillev from Drumlea Road Bridge to Owenreagh Confluence, Co. Tyrone.

Date: 21st January 2016 and 5th August 2025

Photograph 1:
Owenkillev channel with riffle and bank vegetation



Photograph 2:
Owenkillev channel with riffle and bank vegetation



Photograph 3:
Bank erosion and pool



Photograph 4:
Bank protection on LHB



Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 21st January 2016 and 5th August 2025

Owenkillew Site 6 (reach c. 400m): Owenkillew River at Starres, upstream of Gortin Village.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	2		Lowland meandering type morphology with some riffle and glide sections. Site located upstream of Gortin on a section of wide open flat valley floor with farmland on either side of the channel. Land is well drained on valley floor (Alluvium/gravels). Predominantly Uniform flows across channel profile with minimal variation in flow depths and velocities. The channel is deep with c. 2.5m high channel banks. Channel is uniform cross section and straight with near vertical banks. Substrate comprising cobbles gravels, as expected for channel type and location. Ford crossing of river for agricultural access.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	2		Little in channel vegetation. Channel vegetation is sparse very little by way of macrophytes present. No Woody Habitat present.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been altered, managed or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type with range of material. Good diversity of substrate for river type comprising coarse gravels, cobbles and small boulders, with little fine sediment or silt deposited where not expected for type.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No barriers to continuity observed.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 1.5		Bank protected / stabilised with planted trees and vegetation. Minimal evidence of bank physical bank alterations or protection.
	R = 1.5		Bank protected / stabilised with planted trees. Minimal evidence of bank physical bank alterations or protection.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Tree planting along sections of bank with field to bank top. Riparian section has natural vegetation – not managed. Alien Species (Himalayan balsam) present along of channel bank.
	R = 0		Tree planting along bank with field to bank top. Alien Species (Himalayan balsam) extensive along of channel bank.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		Small section of riparian buffer zone along section of the bank. Rest of bank characterized by human activities (agriculture with grassland) extending to the bank top.
	R = 0		No riparian buffer zone, human activities (agriculture with grassland) extend to the bank top over the length of the reach.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0.5		Section of bank where riparian buffer zone is will flood. Small section of floodplain connectivity only.
	R = 0		Significant bank reinforcement and over deepening limits floodplain / channel interaction.
Σ Attribute scores	15.5		
Hydromorphology Score	0.48		
WFD class ^c	Moderate		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenkillew River Hydromorphology (Okw. – S6)

River name and location: Owenkillew River at Starres, upstream of Gortin Village, Co. Tyrone.

Date: 21st January 2016 and 5th August 2025

Photograph 1:
Owenkillew channel and bed substrate



Photograph 2:
Owenkillew channel and banks with vegetation

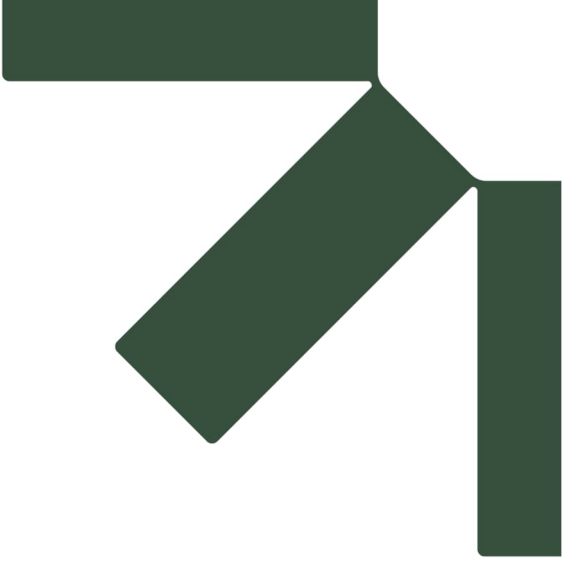


Photograph 3:
Owenkillew bank planted with trees



Photograph 4:
Owenkillew channel





Appendix C Owenreagh River Hydromorphology Field Sheets

Hydromorphology Assessment Owenkillew and Owenreagh Rivers

Gortin, Co. Tyrone, Northern Ireland

Dalradian Gold Ltd

SLR Project No.: 501.065025.00001

24 November 2025

Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Owenreagh Reach 7 (400m): Owenreagh River at Formil Bridge downstream (Owenreagh – S7)

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Mountain pool-rifle system with some cascades. Upland area with poor ground with peat and waterlogged soils. Steep channel which is relatively straight. Channel is shallow only c. 1m in depth and less in places. Channel has been excavated in places. Large boulders present in channel and cascade channel at downstream end of reach. Large boulders in channel at cascade.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	3		Limited in channel vegetation with rooted submerged plants with underwater leaves. Vegetation is sparse and poor quality with a limited range of RHAT vegetation types. Macrophytes as expected but no woody habitat in channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been significantly altered or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type. Good diversity of substrate for river type, with little fine sediment or silt deposited where not expected for type.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No barriers to continuity observed.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 1		Extensive interference and modification of channel bank. Bank protected berm with planted coniferous trees.
	R = 1		Bank stable, no signs of any significant bank erosion.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Disruption of native vegetation with grazing land up to channel bank at trees along c. 65% of bank.
	R = 1		Downstream section of channel bank surveyed is covered by native vegetation with a limited. Vegetation management is evident, with grazing up to channel bank. Otherwise simple native vegetation (rushes etc. with no trees).

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone, human activities planted trees along top of bank.
	R = 0.5		No riparian buffer zone, human activities (rough grazing) extends to the bank top over the length of the reach.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0		No floodplain connectivity across majority of channel reach
	R = 2		Natural bank form present with small floodplain present, poorly defined but typical of upland type channel where valley form allows.
Σ Attribute scores	17		
Hydromorphology Score	0.53		
WFD class ^c	Moderate		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenreagh River at Formil Bridge downstream (Owenreagh – S7)

River name and location: Owenreagh River, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Photograph 1:
Channel alignment and character



Photograph 2:
Bank vegetation and coniferous trees



Photograph 3:
Channel cross section and bank vegetation



Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Owenreagh Reach 7 (400m): Owenreagh River at Formil Bridge downstream (Owenreagh – S7)

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Mountain pool-rifle system with some cascades. Upland area with poor ground with peat and waterlogged soils. Steep channel which is relatively straight. Channel is shallow only c. 1m in depth and less in places. Channel has been excavated in places. Large boulders present in channel and cascade channel at downstream end of reach. Large boulders in channel at cascade.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	3		Limited in channel vegetation with rooted submerged plants with underwater leaves. Vegetation is sparse and poor quality with a limited range of RHAT vegetation types. Macrophytes as expected but no woody habitat in channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been significantly altered or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type. Good diversity of substrate for river type, with little fine sediment or silt deposited where not expected for type.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No barriers to continuity observed.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 1		Extensive interference and modification of channel bank. Bank protected berm with planted coniferous trees.
	R = 1		Bank stable, no signs of any significant bank erosion.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Disruption of native vegetation with grazing land up to channel bank at trees along c. 65% of bank.
	R = 1		Downstream section of channel bank surveyed is covered by native vegetation with a limited. Vegetation management is evident, with grazing up to channel bank. Otherwise simple native vegetation (rushes etc. with no trees).

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone, human activities planted trees along top of bank.
	R = 0.5		No riparian buffer zone, human activities (rough grazing) extends to the bank top over the length of the reach.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0		No floodplain connectivity across majority of channel reach
	R = 2		Natural bank form present with small floodplain present, poorly defined but typical of upland type channel where valley form allows.
Σ Attribute scores	17		
Hydromorphology Score	0.53		
WFD class ^c	Moderate		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenreagh River at Formil Bridge downstream (Owenreagh – S7)

River name and location: Owenreagh River, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Photograph 1:
Channel alignment and character



Photograph 2:
Bank vegetation and coniferous trees



Photograph 3:
Channel cross section and bank vegetation



Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Owenreagh Reach 8 (400m): Owenreagh River downstream of Cashel Bridge (Owenreagh – S8)

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	0		Rifle - glide channel with uniform flows across channel. Open farmland on RHB with Aggregates site up to the channel on the LHB. Downstream of the aggregates site there is extensive wide open valley floor which is well drained farmland. Channel is uniform and relatively straight, box shape profile the channel has been managed in the past and excavated out. Bank is c. 1.5m - 2m in height. Downstream end of reach the channel has been excavated and material placed on RHB. A long berm / wall on the RHB downstream of the bridge prevents the lands from flooding.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	2		In channel vegetation is sparse with some rooted submerged plants with underwater leaves. Vegetation is sparse and poor quality with a limited range of RHAT vegetation types. Macrophytes as expected but no woody habitat in channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been significantly altered or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type. Good diversity of substrate for river type including gravels and cobbles, with little fine sediment or silt deposited where not expected for type.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No barriers to continuity observed in channel.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0		Extensive interference and modification of channel bank. Bank protected at aggregates site.
	R = 0		The upper reach has been protected by wall and downstream C&D blocks/concrete has been placed for minor flood and bank protection works.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank	L = 0.5		Top end of section has trees along bank which are overhanging but no woody habitat. Downstream channel banks are open with grassland and no bank vegetation.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
non natives/disturbance species. J. Habitat structure features.	R = 0.5		Top end of section has trees along bank which are overhanging but no woody habitat. Downstream channel banks are open with grassland and no bank vegetation.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone with aggregates site and farmland to top of bank.
	R = 0		No riparian buffer zone with farmland to top of bank.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0.5		No floodplain connectivity at aggregates site with floodplain on downstream end of site.
	R = 0		No floodplain connectivity across majority of channel reach with aggregates site.
Σ Attribute scores	10.5		
Hydromorphology Score	0.33		
WFD class ^c	Poor		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenreagh River downstream of Cashel Bridge (Owenreagh – S8)

River name and location: Owenreagh River, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Photograph 1:
Channel bank profile



Photograph 2:
Substrate with vegetated channel bank



Photograph 3:
Bank flood protection wall (land side)



Photograph 4:
Bank top with placed material for flood protection



Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Owenreagh Reach 9 (400m): Owenreagh River at confluence with Glensawisk Burn (Owenreagh – S9)

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Rifle - glide channel with uniform flows across channel. Site is at the confluence of the Glensawisk Burn which has a steep gradient. The burn has formed an alluvial fan on the valley floor. Local farmer indicated that the burn used to avulse its channel across the valley floor on a regular basis but was channelized in the 1950's and course is now stable and protected against erosion in places. Farmland on valley floor which is well draining RHB channel is against the valley side. Upstream and downstream of confluence the channel has been modified, deepened and straightened. At the confluence the channel is more dynamic on the bends and has bank erosion and deposition.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	2		In channel vegetation is sparse with some rooted submerged plants with underwater leaves. Vegetation is sparse and poor quality with a limited range of RHAT vegetation types. Macrophytes as expected but no woody habitat in channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been significantly altered or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type. Good diversity of substrate for river type including gravels and cobbles, with little fine sediment or silt deposited where not expected for type.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No barriers to continuity observed in channel.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0.5		Extensive interference and modification of channel bank. Lateral erosion at confluence of burn. Downstream of burn bank has been protected.
	R = 0.5		Downstream of burn bank has been protected.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0		Top end of section has few trees along bank with no woody habitat. Downstream channel banks are protected with planted trees.
	R = 0.5		Top end of section has few trees along bank with no woody habitat. Downstream natural vegetation present where channel against valley side.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone with farmland to top of bank.
	R = 0.5		No riparian buffer zone where farmland to top of bank. Natural vegetation cover where channel against valley side, downstream of burn confluence.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0		Limited floodplain connectivity due to channel modification and bank protection.
	R = 0		Limited floodplain connectivity due to channel modification and bank protection.
Σ Attribute scores	12		
Hydromorphology Score	0.38		
WFD class ^c	Poor		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenreagh River at confluence with Glensawisk Burn (Owenreagh – S9)

River name and location: Owenreagh River, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Photograph 1:
Channel and bank profile



Photograph 2:
Channel and bank profile



Photograph 3:
Channel profile and riffle with substrate



Photograph 4:
Gravel bar substrate at riffle



Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Owenreagh Reach 10 (400m): Owenreagh River downstream of Aghanamerigham Bridge (Owenreagh - S10)

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	0		Rifle - glide channel with uniform flows across channel. Site is located in a wide section of valley floor with farmland on either side of the channel. Downstream of bridge the RHB valley floor narrows slightly and a section of land is poorly drained. Channel is straight and box shape with near vertical channel banks. Channel has been straightened and banks planted with trees for bank stability. Channel banks are c. 3m in height with little opportunity for out of bank flow
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	1		In channel vegetation is sparse with some rooted submerged plants with underwater leaves. Vegetation is sparse and poor quality with a limited range of RHAT vegetation types. Macrophytes as expected but no woody habitat in channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	2		Substrate has not been significantly altered. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type. Good diversity of substrate for river type including gravels and cobbles, with little fine sediment or silt deposited where not expected for type. There is short section immediately downstream of the bridge where some gravels have been removed from the channel.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No barriers to continuity observed in channel.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0		Extensive interference and modification of channel bank. Bank stable except for short section with lateral bank erosion has occurred.
	R = 0		Bank planted with trees for stability. Excavated material from channel has been placed on channel bank downstream of bridge beside laneway for bank protection.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Farmland extends to top of channel bank with trees overhanging bank. Channel banks have been planted with trees to enhance stability / protection. Invasive species, Himalayan balsam, extensive along reach. Overhanging trees afford channel some protection.
	R = 0.5		Channel banks have been planted with trees to enhance stability / protection. Invasive species, Himalayan balsam, extensive along reach. Overhanging trees afford channel some protection.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone with farmland to top of bank. Farmland extends to top of channel bank with trees overhanging bank.
	R = 0		No riparian buffer zone where farmland to top of bank. Farmland extends to top of channel bank with trees overhanging bank.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0		Limited floodplain connectivity due to channel modification and bank protection. Extensive flat valley floor floodplain but no evidence of floodplain connection, flows largely remain within channel.
	R = 0		Limited floodplain connectivity due to channel modification and bank protection. Flows largely remain within channel.
Σ Attribute scores	8		
Hydromorphology Score	0.25		
WFD class ^c	Poor		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenreagh River downstream of Aghanamerigham Bridge (Owenreagh – S10)

River name and location: Owenreagh River, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Photograph 1:
Channel with bed substrate and bank vegetation



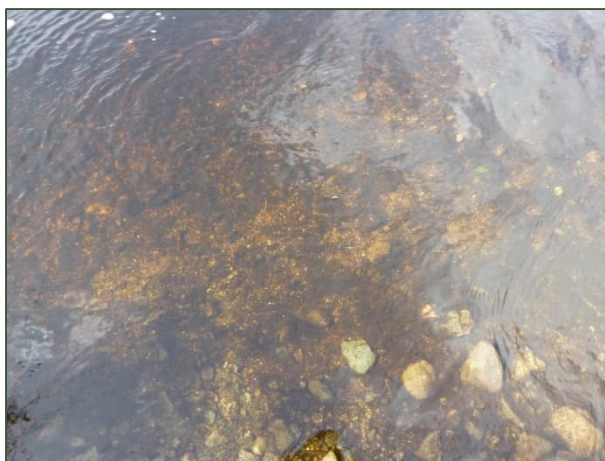
Photograph 2:
Removal of gravels, bank with invasive species (Himalayan balsam)



Photograph 3:
Channel riffle bank with invasive species (Himalayan balsam)



Photograph 4:
Bed substrate gravels and cobbles with brown filament algae in slack flows.



Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Owenreagh Reach 11 (400m): Owenreagh River upstream of Drumlea Bridge (Owenreagh - S10)

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	0		Rifle - glide channel with uniform flows across channel. Narrow section of valley floor on the Owenreagh with flat valley floor floodplain on either side of the channel with relatively well drained farmland. Channel is against the valley side on LHB about 200m upstream of bridge. The channel is uniform cross section, relatively straight with near vertical banks which are protected by planted trees for stability.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	1		In channel vegetation is sparse with some rooted submerged plants with underwater leaves. Vegetation is sparse and poor quality with a limited range of RHAT vegetation types. Macrophytes as expected but no woody habitat in channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been significantly altered. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type. Good diversity of substrate for river type including gravels and cobbles, with little fine sediment or silt deposited where not expected for type. Some minor deposition of sand on bank top/edge only.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No barriers to continuity observed in channel.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0		Extensive interference and modification of channel bank. Bank protection includes tipped C&D materials over short section. Bank planted with trees to provide stable near vertical bank sides.
	R = 0		Extensive interference and modification of channel bank. Some minor lateral bank erosion in places. Bank planted with trees to provide stable near vertical bank sides.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0		Farmland extends to top of channel bank with some trees along bank overhanging river. Invasive species, Himalayan balsam, present along reach.
	R = 0		Farmland extends to top of channel bank with some trees along bank overhanging river. Invasive species, Himalayan balsam, present along reach.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone with farmland to top of bank.
	R = 0		No riparian buffer zone where farmland to top of bank.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0		Limited floodplain connectivity due to channel modification and bank protection. Extensive flat valley floor floodplain but no evidence of floodplain connection, flows largely remain within channel.
	R = 0		Limited floodplain connectivity due to channel modification and bank protection. Flows largely remain within channel.
Σ Attribute scores	8		
Hydromorphology Score	0.25		
WFD class ^c	Poor		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenreagh River upstream of Drumlea Bridge (Owenreagh – S11)

River name and location: Owenreagh River, Co. Tyrone

Date: 22nd January 2016 and 5th August 2025

Photograph 1:
Channel alignment at Drumlea Br. with floodplain on RHB



Photograph 2:
Channel flow with bank vegetation and invasive species (Himalayan balsam)



Photograph 3:
Ford access with invasive species (Himalayan balsam)



Photograph 4:
Channel bank and riparian landuse



Field Assessment of Morphological Condition

Site Code: Owenkillew River, Greencastle, Co. Tyrone

Date: 21st January 2016 and 6th August 2025

Owenreagh Reach 5b (400m): Owenreagh River upstream of Owenkillew (Owenreagh - S5b)

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Rifle - glide channel with uniform flows across channel. Majority of the channel reach is uniform cross section, relatively straight with near vertical banks which are protected by occasional trees for stability. Box shape channel with banks c. 2m in height, not a natural channel morphology, has been straightened, deepened and managed. No lateral channel migration.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	1		In channel vegetation is sparse with some rooted submerged plants with underwater leaves. Vegetation is sparse and poor quality with a limited range of RHAT vegetation types. Macrophytes as expected but no woody habitat in channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Substrate has not been significantly altered. The diversity of substrate types corresponds to that expected for the river type, i.e. channel type. Good diversity of substrate for river type including gravels and cobbles, with little fine sediment or silt deposited where not expected for type. Some minor deposition of sand on bank top/edge only.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No barriers to continuity observed in channel.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0.5		Extensive interference and modification along majority of channel bank. Bank planted with trees to provide stable near vertical bank sides.
	R = 0.5		Extensive interference and modification along majority of channel bank. Bank planted with trees to provide stable near vertical bank sides.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Farmland extends to top of channel bank with some trees along bank overhanging river.
	R = 0.5		Farmland extends to top of channel bank with some trees along bank overhanging river.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0		No riparian buffer zone with farmland to top of bank.
	R = 0		No riparian buffer zone where farmland to top of bank.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0		Limited floodplain connectivity due to channel modification and bank protection. Extensive flat valley floor floodplain but no evidence of floodplain connection, flows largely remain within channel.
	R = 0		Limited floodplain connectivity due to channel modification and bank protection. Extensive flat valley floor floodplain but no evidence of floodplain connection, flows largely remain within channel.
Σ Attribute scores	11		
Hydromorphology Score	0.34		
WFD class ^c	Poor		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Owenreagh River upstream of Owenkillew confluence (Owenreagh – S5b)

River name and location: Owenreagh River, Co. Tyrone

Date: 21st January 2016 and 6th August 2025

Photograph 1:
Channel profile, banks and riparian landuse



Photograph 2:
Channel riffle and bedload



Photograph 3:
Channel bank vegetation and gravel bar



Photograph 4:
Channel profile, glide section and bank vegetation





Making Sustainability Happen



Hydromorphology Assessment of Burns

**Pollanroe Burn, Unnamed Burn, Glenealy Burn,
Curraghinalt Burn and Attagh Burn, Co. Tyrone**

Dalradian Gold Ltd.

Omagh, Co. Tyrone.

Prepared by:

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D14 N2Y7

SLR Project No.: 501.065025.00001

31 October 2025

Basis of Report

This document has been prepared by SLR Environmental Consulting (Ireland) Ltd (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with Dalradian Gold Ltd. (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

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Acronyms and Abbreviations

BWU	Biodiversity & Wildlife Unit
DGL	Dalradian Gold Ltd.
EA	Environment Agency (UK)
EPA	Environmental Protection Agency
ES	Environmental Statement
NED	Natural Environment Division
NIEA	Northern Ireland Environment Agency
OSNI	Ordnance Survey of Northern Ireland
PRONI	Public Record Office of Northern Ireland
RHAT	River Hydromorphology Assessment Technique
SWIA	Surface Water Impact Assessment
LA	Loughs Agency
WFD	Water Framework Directive



1.0 Introduction

This Hydromorphology Assessment report for five Burns located in the Sperrin Mountains, Co. Tyrone, has been prepared by SLR Environmental Consulting (Ireland) Ltd (SLR) for Dalradian Gold Ltd (DGL). The hydromorphology assessment undertaken here covers study reaches of the following Burns:

- Pollanroe Burn;
- Unnamed Burn;
- Glenealy Burn;
- Curraghinalt Burn; and
- Attagh Burn.

This hydromorphology report is a baseline qualitative assessment of the above Burns and is based on a desktop study and walkover baseline hydromorphology survey of the study reaches.

The study reaches of the five Burns are shown by Figure 1 and Figure 2.

The Hydromorphology Assessment for the Burns was prepared in support of Planning Application No. LA10/2017/1249/F and in response to the rebuttal prepared by the Northern Ireland Environment Agency (NIEA) dated November 2024¹. In particular in relation to the classification of the Burns as 'Headwaters' under the UK Biodiversity Action Plan (BAP) Priority Habitat Descriptions² and the hydromorphology of the Burns.

In relation to headwaters the NIEA rebuttal states:

r. Headwaters

- 'At para 1.27 of SOC the applicant refers to the classification of the burns as headwaters and highlights a planning response from NIEA NED indicating that the burns did not meet the definition of headwaters. '*
- 'NIEA Water Regulation are using the term 'headwaters' purely in the sense of the physical nature and geographical location of the burns at the head of the catchment. It is our understanding that this is correct application of the term in respect of the 2015 (EQS) regulations and of the JNCC standards for rivers. '*
- 'NIEA NED colleagues have made further comment in their Rebuttals in respect of the planning application on this aspect, at (Wildlife and Biodiversity, Conservation Designation and Protection teams Rebuttal statement, Annex 9) and this supports the approach that the burns should be treated as headwaters.'*

In relation to hydromorphology the NIEA rebuttal (Annex 9) states:

- 21. 'NED BWU have reviewed the rationale submitted by the applicant to reach this conclusion. In addition, they have reviewed the assessments submitted by the applicant, reviewed the River Habitat Assessment Tool (RHAT) guidance which is employed by the NIEA Hydromorphology Team and reviewed the most up to date aerial photography overlaid with digitised historical mapping dating back to 1832.'***

¹ PAC REFERENCE:2021/ WHR01 and WHR02 DAERA/NIEA REFERENCE: TC 80/20 and TC 81/20 REBUTTAL EVIDENCE. Public Local Inquiry into Dalradian Gold (Curraghinalt) Project. Department of Agriculture, Environment and Rural Affairs and Northern Ireland Environment Agency, Water Regulation (November, 2024)

² UK Biodiversity Action Plan Priority Habitat Descriptions Rivers (Updated December 2011).



22. *'The course of the Pollanroe Burn has been unaltered since at least 1832 and the crossing points, including the quoted Pollanroe Bridge appear on these earliest maps. Over a period of almost 200yrs it could be determined that these minor features have in fact become fully naturalised in the system. Taking all of the information reviewed into account, it is in fact difficult to see how these minor interventions could result in classification as a 'highly modified' watercourse.'*

1.1 Study Purpose and Objective

The purpose of the hydromorphology study is to assess the degree of naturalness of the waterbody, including the river channel and floodplain, and extent of modifications, if any, to the burn waterbodies.

The UK Biodiversity Action Plan (BAP) Priority Habitat Descriptions states that water bodies will qualify as BAP priority habitat either because they are considered to be near-natural, or because they fulfil one or more specific criteria relating to BAP priority species or to particular habitat types.

The list of qualifying criteria for BAP priority habitat includes:

- Riverine water bodies of high hydromorphological / ecological status; and
- To qualify as a priority habitat for 'Rivers' under the criterion of 'headwaters' a *'stream which have been significantly altered from their natural state are however not included'*.

The objective of the hydromorphological study undertaken here is to determine the degree of naturalness of the subject waterbodies listed below, which will allow the hydromorphology status of the waterbodies to be classified under the WFD hydromorphological status classification.

1.2 Site location

The Burns are located in the Owenreagh and Owenkillew catchments and are on the southern and northern sides of Crockanboy Hill and Crocknamoghil Mountain as shown by Figure 1 and Figure 2.

1.3 Technical guidance

The walkover and baseline hydromorphology survey was undertaken in accordance with the:

- Northern Ireland Environment Agency (NIEA) River Hydromorphology Assessment Technique (RHAT) Training Manual - Version 2 (September 2014).

The NIEA RHAT guide was developed for the purpose of Water Framework Directive (WFD) assessment for river status and compliance for habitats (ecological based) in Ireland. However, it provides relevant guidance for undertaking Hydromorphology Assessments.

While the subject burn channels are not classified under the WFD the RHAT, which produces a WFD hydromorphology classification score, was used to classify the hydromorphology of the channels and floodplains as it is the standard WFD hydromorphology classification technique.



1.4 Hydromorphology assessment methodology

The baseline hydromorphology is assessed based on a desktop study and a walkover survey of the study channel reaches. The hydromorphology assessment for the Burn survey reaches includes:

- i. Desktop study, Appendix A;

Hydromorphology Field Sheets and Survey Photographs for:

- ii. Pollanroe Burn - Appendix B;
- iii. Unnamed Burn - Appendix C;
- iv. Glenealy Burn - Appendix D;
- v. Curraghinalt Burn - Appendix E; and
- vi. Attagh Burn - Appendix F.

The walkover survey has established the present day hydromorphology condition of the Burns along the study reaches for the purpose of the assessment.

1.4.1 Walkover survey and scope of field survey

The walkover survey was undertaken across 500 m study reaches of the Burns. There was no access to the Pollanroe Burn below Pollanroe Br. on the Crockanboy Road and the bottom section of the bottom section of the burn downstream of the road was not surveyed.

Additional shorter sections of the Unnamed Burn were investigated, however restrictions around land access along the Burn prevented a full assessment of these sections. There were no access restrictions along the Glenealy, Curraghinalt or Attagh Burns, with access along these watercourses from at least one channel bank to survey from.

The individual Burn study reaches are named and shown on Figure 1 and Figure 2. Each study reach is named with the Burn initials and are also numbered; this naming structure is also used in this report.

The baseline Hydromorphology survey covers the river channel and floodplain system along the study reaches and comprises the identification, description and qualitative assessment of the following:

- River channel plan form and types;
- Floodplain morphology;
- Channel bed and channel bank;
- Channel substrate (bedload) where visible;
- Channel erosion & deposition;
- Channel dynamics (channel change including historical change); and
- Identification of human impacts including weirs, channel modifications, culverts, bank protection measure etc.

1.5 SLR Personnel

This report has been prepared by Dr. [REDACTED] (EurGeol. PGeo. MCIWEM) who is a fluvial geomorphologist and Technical Director with SLR.

[REDACTED] is a technical and project Director in the Water (Hydrology and Hydrogeology) team in SLR's Dublin office. He has over 25 years' experience in environmental consulting including hydromorphology, hydrology, EIA, flood risk and geology, and he is a Professional Geologist (PGeo. EurGeol.) with the Institute of Geologists of Ireland. [REDACTED] specialist experience is



in the field of hydromorphology, water assessments, EIA, hydrological monitoring (hydrology and hydrogeology). He has overseen the design and practical implementation of a number of field scientific monitoring programs, supported the management, analysis and interpretation of the scientific data collected, and written and reviewed the resultant technical reports. [REDACTED] has worked on a wide range of EIA projects in the minerals and mining, power, commercial and infrastructure sectors. He leads as project manager on multi-disciplinary projects and also acts as project director for multi-disciplinary teams.

1.6 Report Structure

This report includes the following sections:

- Section 2.0 - Hydromorphology - Background;
- Section 3.0 - Desktop Review;
- Section 4.0 - Hydromorphology Survey;
- Section 5.0 - Hydromorphology Assessment; and
- Section 6.0 - Hydromorphology Survey Findings.

2.0 Hydromorphology

This section includes an introduction to hydromorphology and river processes at the site and catchment scale and the link between hydromorphology and sediment availability. This section also includes a description of hydromorphology.

2.1 Introduction

Hydromorphology is the science of landforms including their origin, evolution and form, resulting from erosion and depositional processes, and their distribution across the earth's surface. An integral part of hydromorphology is an understanding of the processes which produced the landforms, which includes flowing water. The hydromorphology is the product of several geological and hydrological factors, the principal of which relates to the sediment and flow characteristics and their interaction, which govern the resultant morphology or shape and characteristics of the channel and floodplain. The hydromorphology includes the channel and floodplain morphology and processes.

2.2 Hydromorphology and Water Framework Directive

The Water Framework Directive (WFD) 2000/60/EC uses a classification of rivers in terms of their Hydromorphology to support the ecological status of water bodies. The hydromorphology classification of rivers is used to measure and assess the degree of naturalness of a river channel.

A standardised assessment³ of the attributes and the degree of river naturalness has been developed under the WFD for Hydromorphology under eight criteria:

- Channel morphology and flow types;
- Channel vegetation;
- Substrate diversity and condition;

³ River Hydromorphology Assessment Technique (RHAT) Training Manual - Version 2 (September, 2014)



- Barriers to continuity;
- Bank structure and stability;
- Bank and bank top vegetation;
- Riparian land use; and
- Floodplain interaction.

This hydromorphology classification is used here in this report to determine the attribute quality of the Burns study reaches, for the purpose of the assessment undertaken here.

The river hydromorphology assessment was developed specifically for the WFD hydromorphology assessment requirements of the Directive and has an ecological perspective; it provides for a standard measurement of river hydromorphology and therefore has been used here.

3.0 Desktop Data Review

The desktop data review was undertaken to establish the baseline conditions at the site prior to the walkover survey being undertaken. A desktop survey of available information for the burn study reaches are shown in Appendix A.

3.1.1 Historical Mapping

Historical mapping from the Public Record Office of Northern Ireland (PRONI) and the Land and Property Services (www.spatialni.gov.uk) was accessed and viewed as part of the desktop review.

Available historical mapping from 1846-1862 shows the planform for each of the Burns, see:

- Pollanroe Burn - Plate 1;
- Unnamed Burn - Plate 2;
- Glenealy Burn - Plate 3;
- Curraghinalt Burn - Plate 4; and
- Attagh Burn - Plate 5.

The Burn alignment and planform as shown on the historical mapping indicates little change in the courses compared to the present-day Burns.

Given that many sections of the Burns are in ravines, gorges or on bedrock, it is considered unlikely that there will have been any significant realignment of the burn channels, compared to that indicated on the historical maps.

There will have been slight changes in the channel planform, within the general channel alignment, as bank material is eroded and deposited; planform change with erosion and deposition is a natural process in Burns and Rivers.

A significant change in Burn alignment and planform from the historical mapping is the western tributary of the Pollanroe Burn (see PB Reach 4 on Figure 1 and Figure 2) where a section of the Burn has been culverted across the proposed mine surface infrastructure site. The channel is not shown as being culverted on the PRONI Historical Second Edition 1846-1862 map, see Plate 1, and is not shown as being culverted on the OSNI mapping from 1957-1986, indicating that the section of channel was possibly culverted since c. 1957.



The PRONI historical map for the Attagh Burn shows a mill (Tuck Mill) present at the confluence with the Owenkillew River with a mill race supply to the mill from the Owenkillew river.

Plate 1: Pollanroe Burn PRONI Historical Second Edition (1846-1862)

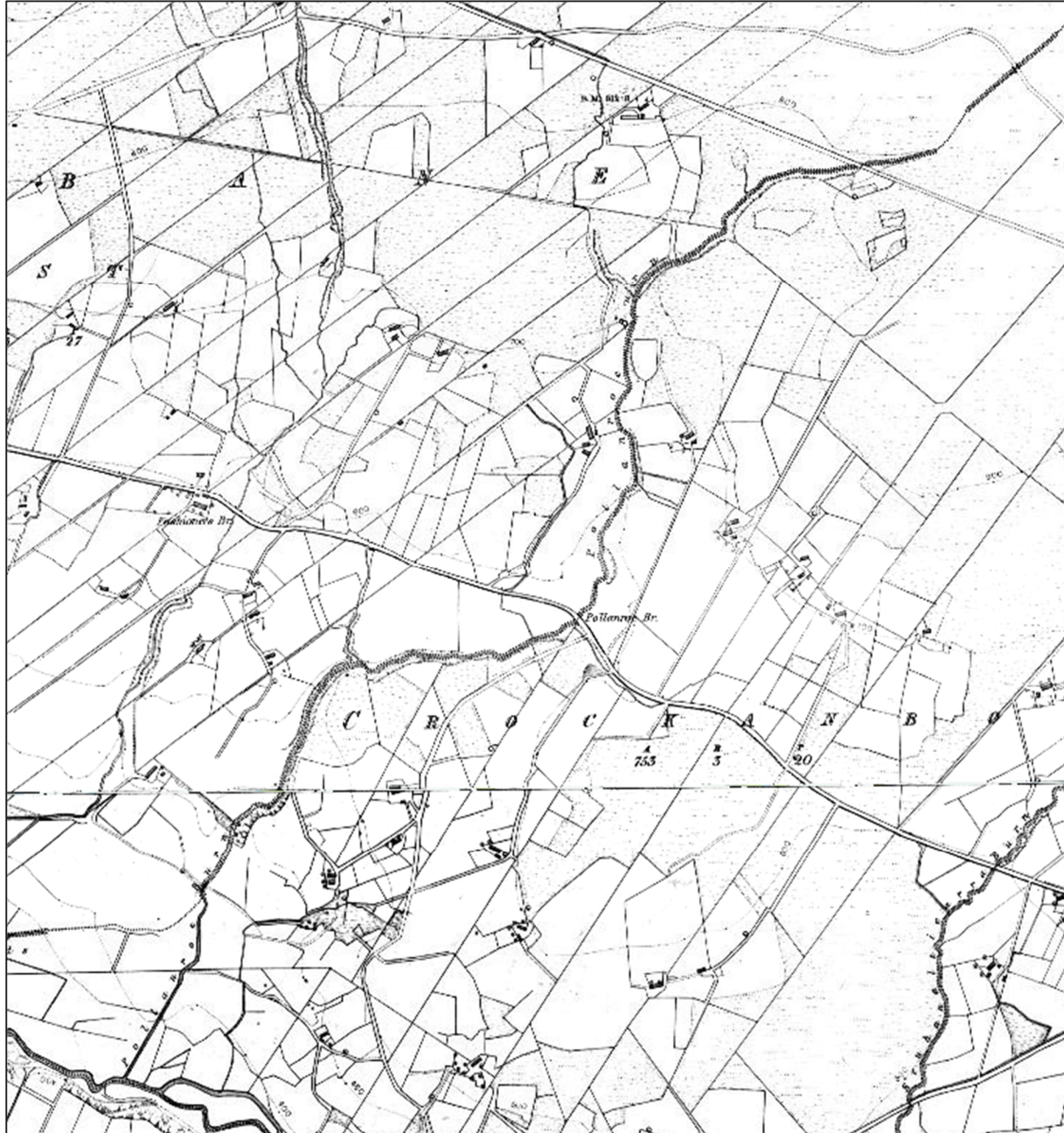


Plate 2: Unnamed Burn PRONI Historical Second Edition (1846-1862)

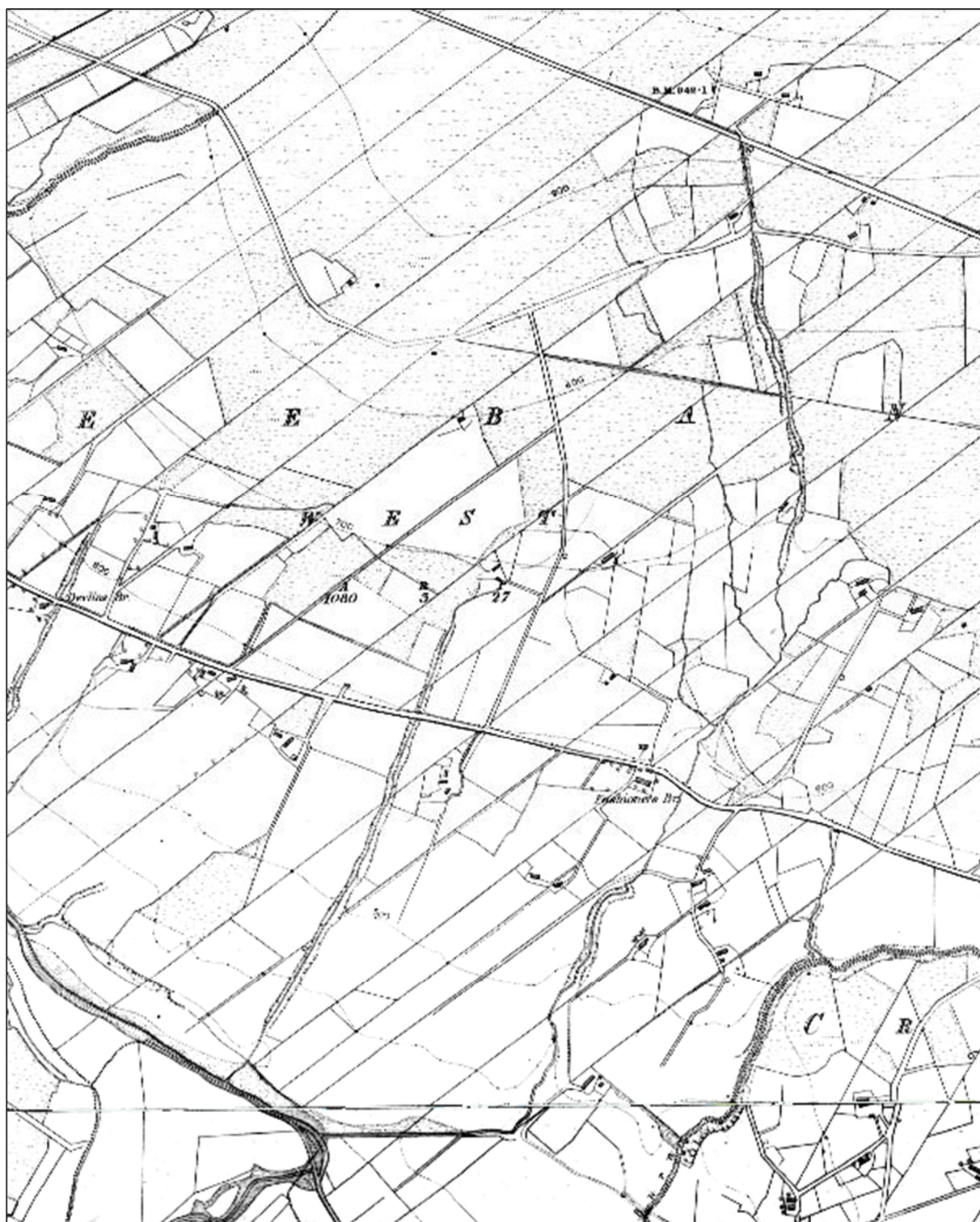


Plate 3: Glenealy Burn PRONI Historical Second Edition (1846-1862)

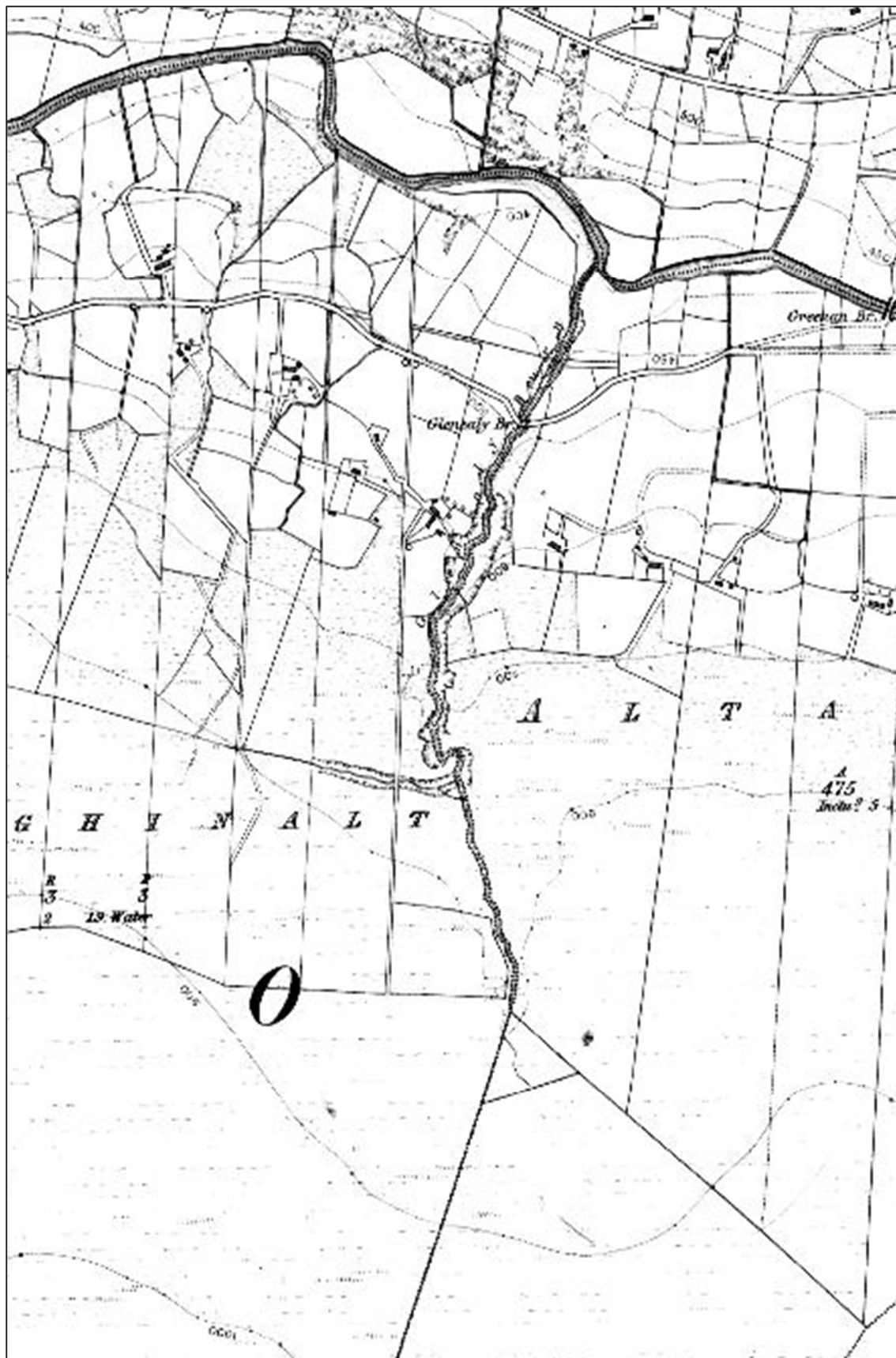


Plate 4: Curraghinalt Burn PRONI Historical Second Edition (1846-1862)

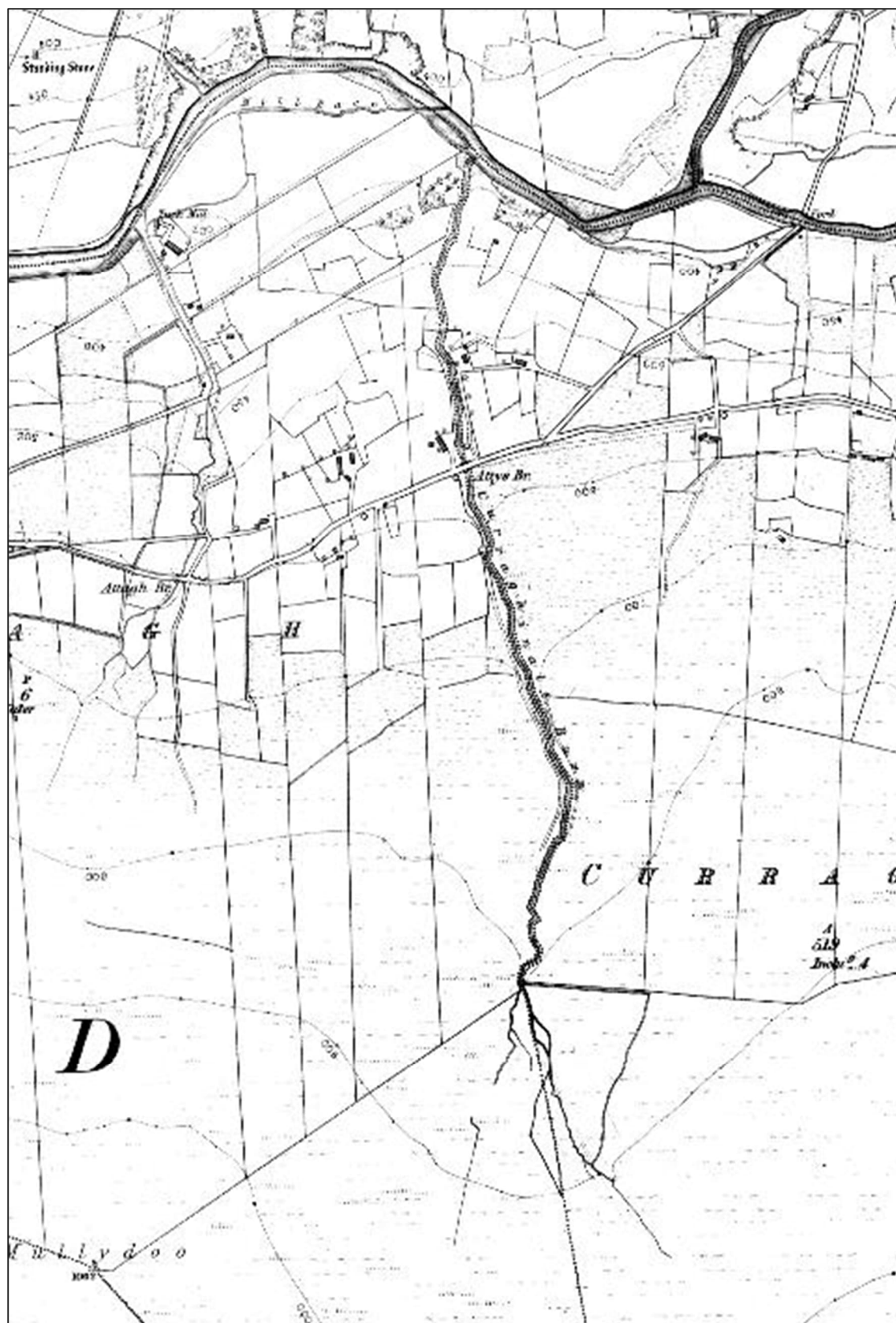
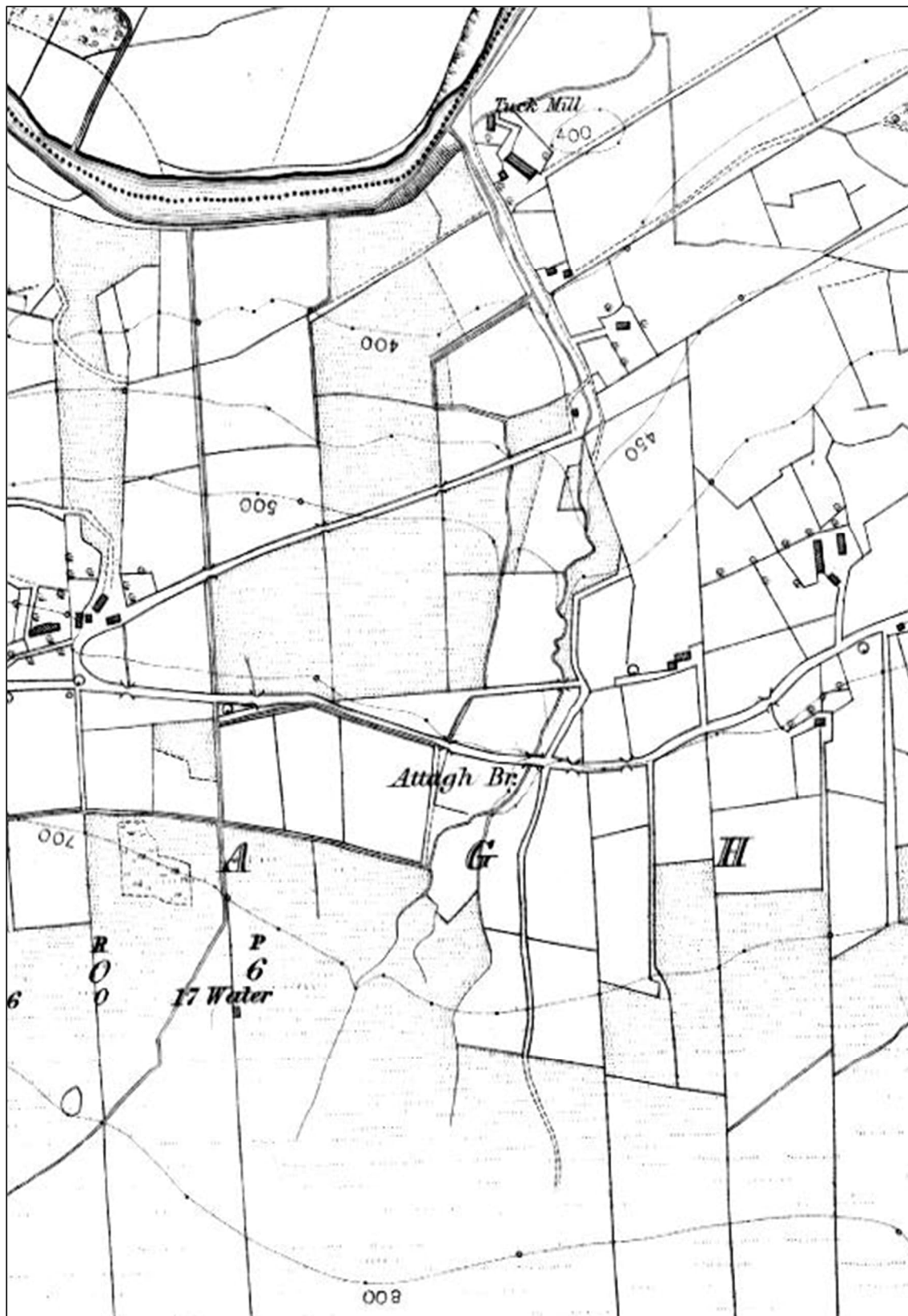


Plate 5: Attagh Burn PRONI Historical Second Edition (1846-1862)



4.0 Hydromorphology Survey

Hydromorphology baseline walkover survey was undertaken along 500 m reaches of each of the Burns. The walkover survey was undertaken during January and August 2025 by SLR, who were accompanied on site by DGL personnel.

The RHAT guidance recommends that the optimum survey season is May to September when rivers tend to be at lower flows and in-channel features can be recorded, surveys can be undertaken outside of this period by applying a moderate default score where in-channel features are not visible due to higher water flows in watercourses. The survey undertaken during August 2025 was within the recommended optimum survey season.

During the walkover survey flows in all of the Burns was sufficiently low, typically <0.3 m depth, that in channel features could be observed and recorded.

The scope of the baseline hydromorphology assessment included river channel morphology and associated floodplain morphology, where present. The walkover survey covered the Burn channel and floodplain system and the identification, description and qualitative assessment of the hydromorphology.

The identification of human impacts including culverts, channel modifications and bank protection measure in the field were recorded.

4.1 Hydromorphology Field Survey

The hydromorphology field survey data was collated and recorded on the Field Assessment of Morphological Condition sheets included in the Appendices for each Burn.

4.2 Hydromorphology Attributes

The River Hydromorphology Assessment Technique (RHAT) scores the hydromorphology attributes between 0 and 4 depending on the degree of naturalness. The attributes scored are:

- Channel form and flow type;
- Channel vegetation types;
- Substrate bedload condition;
- Barriers to continuity;
- Bank structure and stability (Left Bank & Right Bank);
- Bank vegetation (Left Bank & Right Bank);
- Riparian land cover (Left Bank & Right Bank); and
- Floodplain connectivity (Left Bank & Right Bank).

Each of the above attributes are scored based on findings from the baseline hydromorphology walkover survey, see each appendix below for relevant burn.

The RHAT scoring system provides a score for the hydromorphology of the river channel across five classes ranging between High and Bad. The hydromorphology scoring is based on a qualitative assessment in the field, the scoring system is detailed in the RHAT (NIEA, 2014).



5.0 Hydromorphology Assessment

The river hydromorphology assessment scores for the study reaches along each of the burns is shown for:

- Pollanroe Burn - Table 1;
- Unnamed Burn - Table 2;
- Glenealy Burn - Table 3;
- Curraghinalt Burn - Table 4; and
- Attagh Burn - Table 5.

The WFD Hydromorphology classification scheme is shown in Table 6 below.

Table 1: Pollanroe Burn Hydromorphology Scores and WFD Class

Study Reach	Hydromorphology Attribute Total Score	Hydromorphology Score	WFD Hydromorphology Class
PB Reach 1	27	0.84	High
PB Reach 2	18	0.56	Moderate
PB Reach 3	8	0.25	Poor
PB Reach 4	8	0.25	Poor

Table 2: Unnamed Burn Hydromorphology Scores and WFD Class

Study Reach	Hydromorphology Attribute Total Score	Hydromorphology Score	WFD Hydromorphology Class
UB Reach 1	10	0.31	Poor

Table 3: Glenealy Burn Hydromorphology Scores and WFD Class

Study Reach	Hydromorphology Attribute Total Score	Hydromorphology Score	WFD Hydromorphology Class
GB Reach 1	25	0.78	Good
GB Reach 2	26	0.81	High
GB Reach 3	26	0.81	High

Table 4: Curraghinalt Burn Hydromorphology Scores and WFD Class

Study Reach	Hydromorphology Attribute Total Score	Hydromorphology Score	WFD Hydromorphology Class
CB Reach 1	22	0.69	Good
CB Reach 2	26	0.81	High
CB Reach 3	26	0.81	High



Table 5: Attagh Burn Hydromorphology Scores and WFD Class

Study Reach	Hydromorphology Attribute Total Score	Hydromorphology Score	WFD Hydromorphology Class
AB Reach 1	16.5	0.52	Moderate
AB Reach 2	19	0.59	Moderate

Table 6: WFD Hydromorphology Score and Classification Scheme

Σ Hydromorphology Attribute Scores	Hydromorphology Score ¹	WFD Hydromorphology Class
≥ 26	≥ 0.8	High
≥ 19.5 to < 26	$0.6 - < 0.8$	Good
≥ 13 to < 19.5	$0.4 - < 0.6$	Moderate
≥ 6.5 to < 13	$0.2 - < 0.4$	Poor
< 6.5	< 0.2	Bad

¹ Hydromorphology Score = Σ Attribute scores/32

The WFD hydromorphology scores indicate that the Pollanroe Burn study reaches (PB Reach 2, PB Reach 3 and PB Reach 4) and the Unnamed Burn study reach (UB Reach 1) are classified as being Moderate to Poor due to modifications of the channel, for example culverting and channel straightening, as well as the management and modification of the channel bank and riparian vegetation, primarily through and for livestock grazing.



5.1 Hydro Characteristics

A Surface Water Impact Assessment⁴ (SWIA) has been undertaken for the project and was submitted as part of the Second Addendum to the ES.

The purpose of the SWIA was to calculate the impact of the Project on surface water flows and surface water quality in watercourses potentially affected by the Project. The study included an assessment of the existing flow regime in the local Burns which are summarised from the SWIA here in Table 7 below.

Table 7: Summary flow characteristics in Burns from SWIA

Burn	Catchment Area (km ²)	95%ile annual low flow (m ³ /s)	Annual Average Flow (m ³ /s)	2-year flood flow (m ³ /s)
Curraghinalt Burn at confluence with Owenkillew River	1	0.0057	0.022	1.12
Attagh Burn at confluence with Owenkillew River	0.6	0.0034	0.013	0.67
Pollanroe Burn at confluence with Owenreagh River	2	0.0114	0.04	2.24
Unnamed Watercourse at confluence with Owenreagh River	1.4	0.008	0.031	1.57

An assessment of the predicted changes in flows in the subject Burns has been undertaken by Kaya Consulting⁵ and these changes are set out in Table 8 below. The predicted changes in the 2-year flood flow in the Burns are not considered to be significant in terms of the channel hydromorphology.

Table 8: Change in 2-year flood flows in Burns post mine development

Burn	Catchment Area (km ²)	2-year flood flow pre-development (m ³ /s)	2-year flood flow post development (m ³ /s)	Change in 2-year flood flows
Curraghinalt Burn at confluence with Owenkillew River	1	1.12	1.12	No Change
Attagh Burn at confluence with Owenkillew River	0.6	0.67	0.67	No Change
Pollanroe Burn at confluence with Owenreagh River	2	1.54	1.37	11% Decrease
Unnamed Watercourse at confluence with Owenreagh River	1.4	1.57	1.5	5% Decrease
Glenealy Burn at confluence with Owenkillew River	1.1	1.23	1.23	No Change

⁴ Environmental Statement - Volume 3, Appendix C4 Surface Water Impact Assessment (November, 2017).

⁵ Technical Report - Surface Water, Kaya Consulting (September, 2025).



6.0 Hydromorphology Survey Findings

This section details the findings from the hydromorphology assessment undertaken.

6.1 Pollanroe Burn

The hydromorphology of the Pollanroe Burn is classified as High, Moderate to Poor based on the RHAT methodology for the WFD hydromorphology classification scheme.

The Pollanroe Burn is Classified as High (PB Reach 1), Moderate (PB Reach 2) and Poor (PB Reach 3 and 4) at the proposed mine surface infrastructure site.

PB Reach 2 includes sections of the Pollanroe Burn both at and downstream of the proposed mine surface infrastructure site.

The survey findings for each reach of the Pollanroe Burn are summarised here:

PB Reach 1 - High Class (see Appendix B) with minimal modifications.

PB Reach 2 - Moderate Class (see Appendix B) due to modifications to:

- Channel vegetation;
- Barriers to continuity including culvert, ford and waterfall;
- Bank vegetation; and
- Riparian Land use.

PB Reach 3 - Poor Class (see Appendix B) due to modifications to:

- Channel morphology and flow types;
- Channel vegetation;
- Substrate condition;
- Barriers to continuity;
- Bank structure and stability;
- Bank vegetation;
- Riparian land use; and
- Floodplain connectivity.

PB Reach 4 - Poor Class (see Appendix B) due to modifications to:

- Channel morphology and flow types;
- Channel vegetation;
- Substrate condition;
- Barriers to continuity;
- Bank structure and stability;
- Bank vegetation;
- Riparian land use; and
- Floodplain connectivity.



The assessment undertaken here indicates that the Pollanroe Burn at the proposed infrastructures site are classified as Moderate to Poor hydromorphology (Reaches 2, 3 and 4) indicating that they have been significantly altered from their natural state and on this basis would not qualify as 'headwaters' under the UK Biodiversity Action Plan (BAP) Priority Habitat Descriptions.

The qualifying criteria for UK BAP Priority Habitat include the following:

- Riverine water bodies must be of high hydromorphological / ecological status; and
- A stream which has been significantly altered from their natural state are not included.

It is considered that the findings from this hydromorphology survey and assessment support the previous submission made by the applicant under ES First Addendum⁶ that the Pollanroe Burn at the infrastructure site is '*unlikely to meet the criteria for Headwaters*' under the UK Biodiversity Action Plan (BAP) Priority Habitat Descriptions.

The assessment undertaken here indicates that the Pollanroe Burn at the proposed infrastructures site are classified as Moderate to Poor hydromorphology indicating that they have been significantly altered from their natural state and on this basis would not be classified as headwaters under the UK BAP Priority Habitat Descriptions.

6.2 Unnamed Burn

The hydromorphology of the Unnamed Burn is classified as Poor based on the RHAT methodology for the WFD hydromorphology classification scheme. The Unnamed Burn is Classified as Poor (UB Reach 1) at the proposed mine surface infrastructure site.

UB Reach 1 - Poor Class (see Appendix C) due to modifications to:

- Channel morphology and flow types;
- Channel vegetation;
- Barriers to continuity;
- Bank structure and stability;
- Bank vegetation;
- Riparian land use; and
- Floodplain connectivity.

6.3 Glenealy Burn

The hydromorphology of the Glenealy Burn is classified as High to Good based on the RHAT methodology for the WFD hydromorphology classification scheme. The Glenealy Burn is Classified as Good (GB Reach 1) and High (GB Reach 2 and 3).

GB Reach 1 - Good Class (see Appendix D) due to modifications to:

- Channel morphology and flow types; and
- Bank vegetation.

⁶ Curraghinalt Gold Project Addendum to Environmental Statement SRK Consulting (UK) Limited UK7511 (July, 2019)



6.4 Curraghinalt Burn

The hydromorphology of the Curraghinalt Burn is classified as High to Good based on the RHAT methodology for the WFD hydromorphology classification scheme. The Curraghinalt Burn is Classified as Good (CB Reach 1) and High (CB Reach 2 and 3).

CB Reach 1 - Good Class (see Appendix E) due to modifications to:

- Channel morphology and flow types;
- Bank structure and stability;
- Riparian land use; and
- Floodplain connectivity.

6.5 Attagh Burn

The hydromorphology of the Attagh Burn is classified as High to Good based on the RHAT methodology for the WFD hydromorphology classification scheme. The Attagh Burn is Classified as Moderate (AB Reach 1 and 2).

AB Reach 1 - Moderate Class (see Appendix F) due to modifications to:

- Channel morphology and flow types;
- Channel vegetation;
- Barriers to continuity;
- Bank structure and stability;
- Bank vegetation;
- Riparian land use; and
- Floodplain connectivity.

AB Reach 2 - Moderate Class (see Appendix F) due to modifications to:

- Channel morphology and flow types;
- Channel vegetation;
- Barriers to continuity;
- Bank vegetation; and
- Riparian land use.



7.0 Loughs Agency Transboundary Submission

The Loughs Agency (LA) submitted a Transboundary Consultation response dated the 23rd April 2025, which was included in the Donegal Co. Council submission on potential Transboundary effects associated with the proposed development (Ref. No. TB.25/01) dated the 9th May 2025.

The sections of the LA submission in relation to hydromorphology are set out in Table 9 below.

Table 9: Summary of Loughs Agency Transboundary Consultation submission relating to hydromorphology.

Paragraph Number	Loughs Agency Submission
9.10	<i>Loughs Agency also have concerns regarding methodological issues in the applicant's determination of 'low ecological value'. The Proportion of Sediment-sensitive Invertebrates (PSI) tool for sediment assessment is a less reliable method when utilised without species-level data. This methodology should be used alongside River Hydro morphology Assessment Technique (RHAT). Use of single classifications for number of taxa (NTaxa) and average score per taxa (ASPT) deviates from River Invertebrate Classification Tool (RICT) guidelines, which require combined spring and autumn classifications. This calls into doubt assertions made by the applicant in relation to long term invertebrate monitoring. Combining issues in the assessment methodology for macroinvertebrates, salmon habitat and the omission of the Pollanroe Burn, Unnamed watercourse and Curraghinalt Burn from the sHRA despite the clear presence of the site selection feature and against best practice and relevant case law will result on an adverse impact on the integrity of the Atlantic salmon population and thereby an impact on both the Owenkillev River and tributaries SAC and River Finn and tributaries SAC .</i>
10.24	<i>The applicant states that the mine's water management will lower flood flows in the Pollanroe Burn (point 8 executive summary RR9) and that erosion concerns are overstated; The applicant is wrong. Firstly, the statement overlooks the cumulative impacts of increased low and average flows over time on channel geomorphology. While it is accurate to say that erosion typically occurs during high-flow events, even small but sustained increases in low and average flows will alter sediment transport dynamics and the stability of bed material. For example, subtle changes in flow velocity and wetted perimeter will incrementally shift fine sediments and affect the structure and composition of the channel bed and banks. Alteration of the channel bed and banks will impact Atlantic salmon habitat. Reducing the available salmon habitat will result in a failure to achieve the Conservation Objectives of the Owenkillev River and tributaries SAC.</i>
10.25	<i>Additionally, the claim that bed material in the Pollanroe Burn is large and resistant to erosion under normal conditions does not reflect reality on the ground (Loughs Agency habitat survey data 2024 Appendix 3). In any event, variations in substrate composition, bank material, and channel morphology would create localised areas of vulnerability. In these areas, moderate increases in flow would accelerate erosion or sediment displacement, leading to downstream sedimentation or changes in habitat conditions. Furthermore, while an annual geomorphology survey is proposed as part of the SGEMAP. Geomorphological changes are often incremental and are unlikely to be immediately apparent in annual surveys, particularly if baseline conditions are not well understood or if monitoring does not capture subtle shifts in sediment transport or channel morphology. Given the factual inaccuracies present throughout the applicant's data to this point, Loughs Agency expect any monitoring carried out by the applicant to be of a standard high enough to effectively react to changes in the geomorphology to be protective of salmon habitat.</i>



Paragraph Number	Loughs Agency Submission
15.6	<i>habitat structure: characteristic channel morphology provides the diversity of water depths, current velocities, and substrate types necessary to fulfil the spawning, juvenile and migratory requirements of Atlantic Salmon, so that operations that widen, deepen or straighten the channel reduce variations in habitat; the method of assessment of habitats is to be via RHAT.</i>
24.3	<i>Nursery habitat in tributaries is also important. Juvenile fish spawned in the surrounding higher stream order rivers, e.g. the confluence of two tributaries, require nursery habitat in the tributaries. Provision of sufficient nursery habitat is necessary to ensure the survival of as many juvenile fish as possible. Reduction in nursery habitat means that juvenile salmon will be forced to compete with each other for vital resources in their early life stages, resulting in higher mortality and a reduced number of fishes surviving to migrate to sea and subsequently return to spawn. These impacts will be exacerbated by the loss of macroinvertebrates as a food source following the significant alterations to the hydro morphology of the watercourse following the creation of numerous outfalls, headwalls and culverts.</i>

Response to LA Transboundary Consultation Submission Paragraph 9.10:

The River Hydromorphology Assessment Technique (RHAT) has been used here in this report to assess the Pollanroe Burn, Unnamed Burn, Glenealy Burn, Curraghinalt Burn and Attagh Burn.

Response to LA Transboundary Consultation Submission Paragraph 10.24:

The 2-year flood flow in the Pollanroe Burn has been assessed and there will be a decrease in flow in the burn as a result of the proposed development, see Table 8 above.

The predicted changes in the 2-year flood flow in the Burns are not considered to be significant in terms of the channel hydromorphology.

Response to LA Transboundary Consultation Submission Paragraph 10.25:

The formative flows on channel hydromorphology will be the median of the annual maximum flood flows (2-year return period) or greater flows.

It is not considered that there will be the potential for significant morphological change to the river channel and floodplain as a result of low flows or average flows.

Response to LA Transboundary Consultation Submission Paragraphs 15.6 and 24.3:

The hydromorphology of the Pollanroe Burn at the proposed infrastructure site is assessed here in this report as being Poor to Moderate Class, see Section 6.1 above, based on the RHAT survey findings.



FIGURES

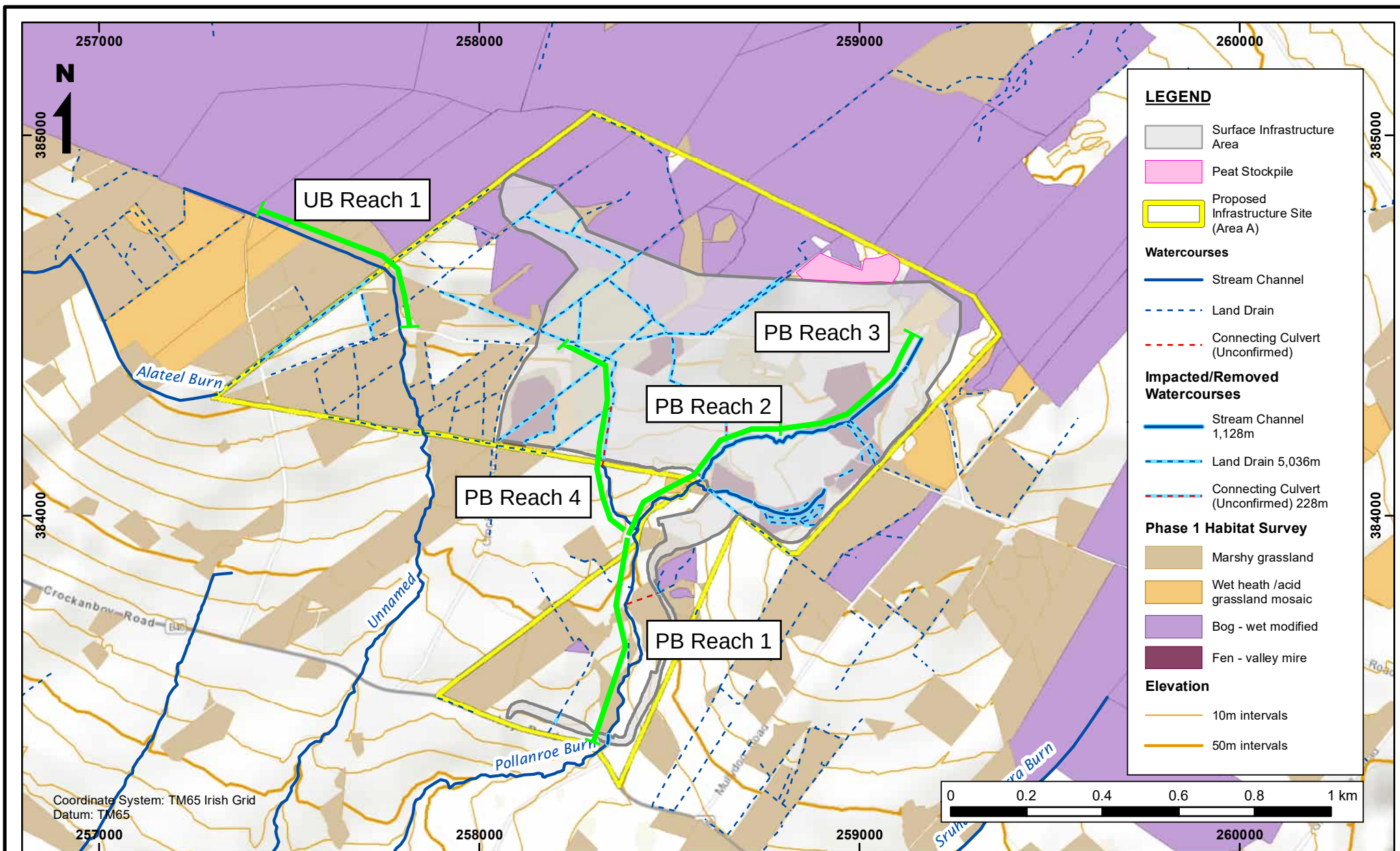
Figure 1

Study reaches and proposed mine surface infrastructure site (Area A) for the Pollanroe Burn and the Unnamed Burn

Figure 2

Study reaches for the Pollanroe Burn, Unnamed Burn, Glenealy Burn, Curraghinalt Burn and the Attagh Burn





U7511

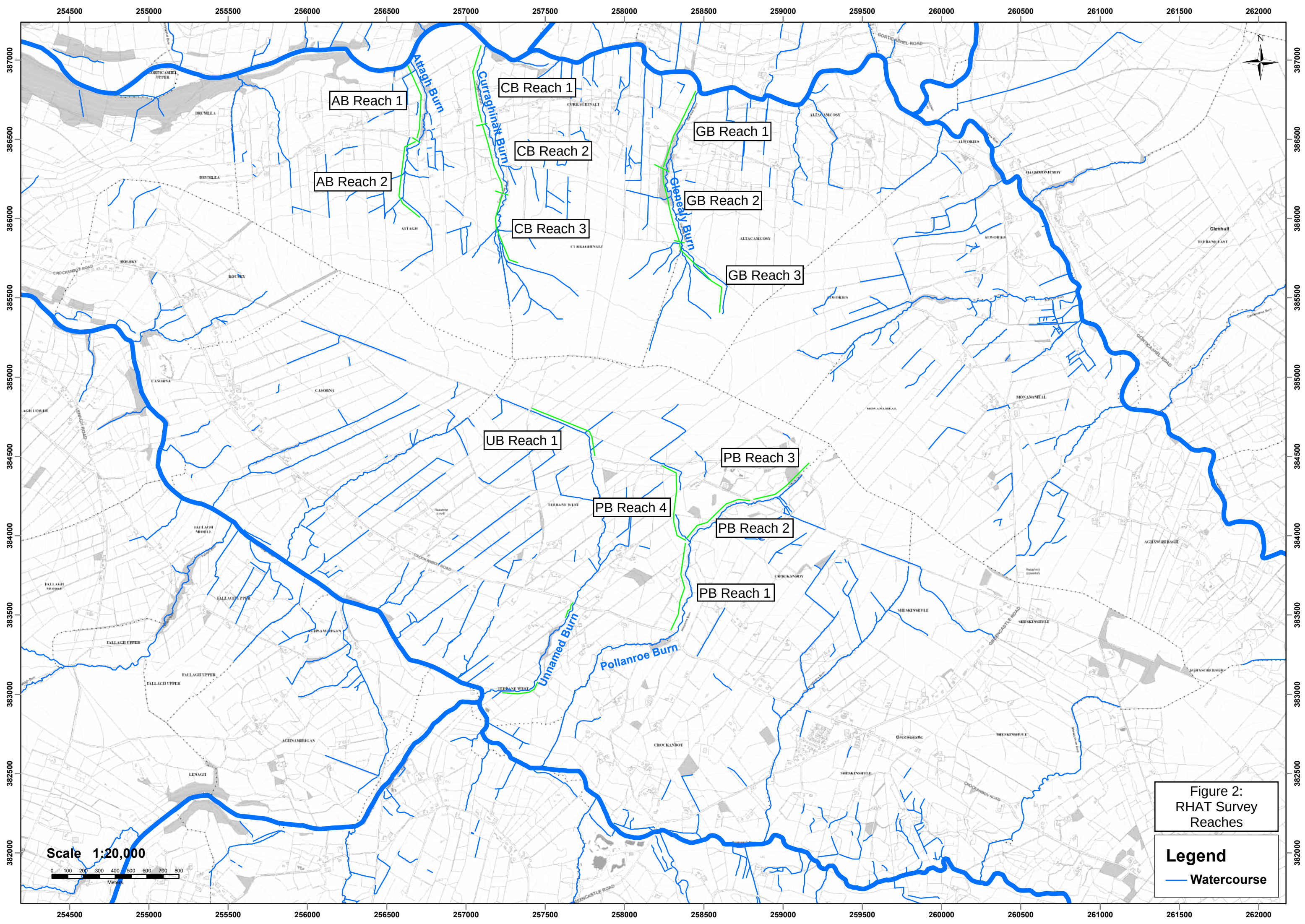
CURRAGHINALT EIA SUPPORT

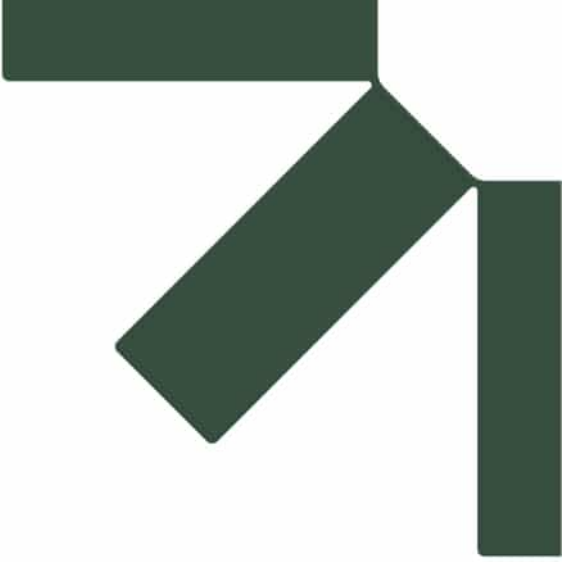
srk consulting

Watercourses

(With RHAT Survey
Reaches - January, 2025.)

**Figure 1:
RHAT Survey
Reaches**





Appendix A RHAT Desk Study

Hydromorphology Assessment of Burns

Pollanroe Burn, Unnamed Burn, Glenealy Burn, Curraghinalt Burn and Attagh Burn, Co. Tyrone

Dalradian Gold Ltd.

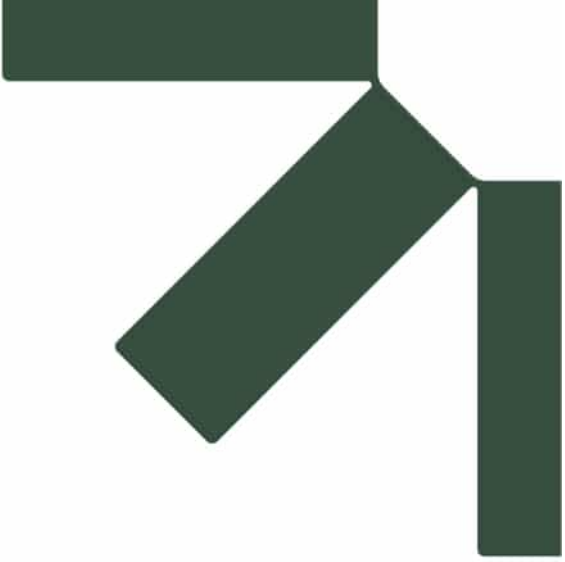
SLR Project No.: 501.065025.00001

31 October 2025

RHAT Desktop & Field Notes

Site Identification	
River Name: Pollanroe Burn, Unnamed Burn, Glenealy Burn, Curraghinalt Burn and Attach Burn Location Near Gortin, Co. Tyrone Water Body ID: Locations: see Figures 1 and 2 RHAT or Spot Check* - RHAT	Site Code DGL. Nearest WFD site: Owenreagh (East) River (Drumlea), Waterbody Code UKGBNI1NW010104041. Owenkillev River (Drumlea), Waterbody Code UKGBNI1NW010104043 Site location: Sperrin Mountains Reason of Survey: Baseline Survey Hydromorphology Start at / SPCK View: D/S or U/S* Surveyed from: LB / RB / Both / In-Channel / Bridge*
Desk-study Notes	Field Notes
ASSESSMENTS MADE PRIOR TO FIELDWORK	River Type(s): Burns are cascade Pool and bedrock type channels
River type: Upland streams on peat and glacial till Estimated river width (m) = 2-4m Estimated floodplain width (m) = max ~10m Riparian land cover types: Trees along river bank and agricultural land (grazing) Designations: Y / No Natural Heritage Designations: RAMSAR / SAC / SPA / AONB / NONE Comparison with historic map: The Burn alignments shown on the OSNI Historical First Edition (1832-1846) do not show any visible / significant planform change from to the present day except for the west tributary of the Pollanroe Burn, a section of which has been culverted beneath a field. Drift Geology: Subsoils on valley floor comprise Glacial outwash Sand & Gravel with some recent alluvium. Valley sides have Glacial till material while the upper sections of the burns are on peat Solid Geology:	Date: 13th/14th and 30th/31st January 2025 and the 6th/7th August 2025 Time: c. 10:00 to 16:00 Surveyor: XXXXXXXXXX Rain last week: Yes - January. No - August Weather conditions at site: 13th/14th January - Overcast, cold and damp / showers. 30th/31st January - Bright, sunny, clear, no rain. 6th/7th August – Sunny, warm with few heavy showers with Survey length/Visible stretch (m) = max ~30m River width (m) estimated <i>at start of survey</i> = ~2m River depth (m) estimated <i>at start of survey</i> = ~0.3m Overall valley form (<i>circle all that apply</i>) Convex steep valley sides of the Owenreagh and Owenkillev while the steeper gradient sections of the burns were characterized by deep ravines.

meta-sediments from the Mullaghcarn Formation comprising Semi-pelite, quartz semi-pelites and psammities with subordinate amphibolites bands. Note below other relevant information: See Hydromorphology field sheets for detailed description.	Channel maintenance / dredging: Y / N / NK * Historical past there has been land drainage and culverting of sections of the Pollanroe Burn and sections of the burns have been modified for bank protection for local farm access. Modification of bank and riparian vegetation for rough grazing. (See Hydromorphology field sheets for details). Restoration or management activity: Y / N / NK * No evidence of channel / floodplain restoration or management.
Field Health and Safety Information <i>Circle applicable number from 1 = low risk to 5 – high risk</i>	
PARKING 1 2 3 4 5 FENCES / BARRIERS 1 2 3 4 5 DENSE VEGETATION 1 2 3 4 5 BRIDGE N/A 1 2 3 4 5	BANK STEEPNESS OR STABILITY 1 2 3 4 5 RISK FROM ANIMALS 1 2 3 4 5 PHONE COVERAGE 1 2 3 4 5
Details of access: Via lands (with permission)	
<i>*circle as appropriate</i>	
Data transfer to computer: 09/02/2025 and 08/08/2025	
Data Input (analyst/date): 31/01/2025	



Appendix B Pollanroe Burn Hydromorphology

Hydromorphology Assessment of Burns

Pollanroe Burn, Unnamed Burn, Glenealy Burn, Curraghinalt Burn and Attagh Burn, Co. Tyrone

Dalradian Gold Ltd.

SLR Project No.: 501.065025.00001

31 October 2025

Field Assessment of Morphological Condition

Site Code: Pollanroe Burn, Greencastle, Co. Tyrone

Date: 13th January and 6th August 2025

PB Reach 1 (500m): Upstream from Crockanboy Bridge to above waterfall.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	4		Cascade Step Pool (CSP) morphology with natural channel, cobbles and boulders. Steep channel gradient. Channel form appears natural and the course has not been altered. The channel planform, cross sections, bedform and flow types are natural for type of channel. Natural features such as boulders, bedrock outcrops in uppers section of reach, woody bris across channel.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	3		The majority of reach the channel is through ravine section and the vegetation is natural. Lower 150m from Crockanboy Br. there are fields up to the channel bank with grazing and animal access to Burn. The range of vegetation types present is slightly less than optimal for the river type and riparian conditions with vegetation management along lower section of Burn only. No in channel vegetation observed
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	4		Substrate has not been altered, managed or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. CSP channel type.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	2		The bridge culvert at Crockanboy Road forms a barrier to impede passage of biota, as the downstream end has a drop of several meters. Apart from Crockanboy Br. there are no other artificial barriers / structures in the channel. Waterfall at top of reach is barrier to continuity above Reach 1
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 2		Banks are in their natural condition, which includes unstable, eroding, undercut, irregular and also stable banks.
	R = 2		Banks are in their natural condition, which includes unstable, eroding, undercut, irregular and also stable banks.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 1.5		>85% of survey length or bank is covered by native vegetation with canopy layers. A small amount of alien species present (<15% bank area)
	R = 1.5		>85% of survey length or bank is covered by native vegetation with canopy layers. A small amount of alien species present (<15% bank area)
7. Riparian land use L/R Desktop riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 1.5		Vegetation cover within the riparian zone is >85% natural and this dominates the areas closest to the bank top. Some minor impacts includes livestock poaching at the lower end of reach
	R = 1.5		Vegetation cover within the riparian zone is >85% natural and this dominates the areas closest to the bank top. Some minor impacts may include footpaths or trails
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 2		Natural bank form. Flooding where valley form allows. Valley form results in natural valley confinement for reach of Burn.
	R = 2		Natural bank form. Flooding where valley form allows. Valley form results in natural valley confinement for reach of Burn.
Σ Attribute scores	27		
Hydromorphology Score	0.84		
WFD class ^c	High		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

$$\text{HM Score} = \Sigma \text{Attribute scores} / 32$$

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Pollanroe Burn Hydromorphology (PB-R1)

River name and location: Pollanroe Burn, Greencastle, Co. Tyrone

Date: 13th January 2025 and 6th August 2025

Photograph 1:
Crockanboy Road Br.



Photograph 2:
Channel with grazing up to bank top



Photograph 3:
Natural planform and bedload with invasive plant species



Photograph 4:
Natural planform, bedload and woody habitat with invasive plant species



Field Assessment of Morphological Condition

Site Code: Pollanroe Burn, Greencastle, Co. Tyrone

Date: 13th January 2025

PB Reach 2 (500m): From Waterfall to Ford Crossing at Infrastructure Site.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	3		Cascade Step Pool (CSP) morphology with natural channel, cobbles and boulders. Steep channel gradient. Presence of culvert and ford crossing on channel. Channel form is natural and the course has not been altered. The channel planform, cross sections, bedform and flow types are natural for type of channel.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	1		Lower section of reach the channel is through ravine section and the marginal vegetation is natural no evidence of vegetation management. Upper section at Infrastructure Site the channel marginal vegetation has been removed and no woody habitat is present. No in channel vegetation observed
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	4		Substrate has not been altered, managed or removed. The diversity of substrate types corresponds to that expected for the river type, i.e. CSP channel type.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	1		There are a number of barriers to continuity present along this Reach. The ford at the top end of the reach is a man-made barrier to continuity. Field access track and culvert in the middle section is a man-made barrier to continuity. The waterfall at bottom end of this reach is a natural barrier to continuity. Score = 1 as major feature such as culvert is present.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 1.5		Banks are natural but unstable with minor poaching or Terracing
	R = 1.5		Banks are natural but unstable with minor poaching or Terracing

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		<50% of the survey stretch is covered by native vegetation. At infrastructure site presence of closely cropped Improved Grassland vegetation. Management of vegetation evident through grazing and clearance / maintenance of vegetation along banks.
	R = 0.5		<50% of the survey stretch is covered by native vegetation. At infrastructure site presence of closely cropped Improved Grassland vegetation. Management of vegetation evident through grazing and clearance / maintenance of vegetation along banks.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		<50% of the survey stretch riparian cover is natural with native vegetation. Significant areas along reach (>50%) close to the bank top are affected by human activities including management and removal of vegetation with improved grassland (IG). This occurs at infrastructure site presence of closely cropped Improved Grassland vegetation. Management of vegetation evident through grazing and clearance / maintenance of vegetation in riparian zone.
	R = 0.5		<50% of the survey stretch riparian cover is natural with native vegetation. Significant areas along reach (>50%) close to the bank top are affected by human activities including management and removal of vegetation with improved grassland (IG). This occurs at infrastructure site presence of closely cropped Improved Grassland vegetation. Management of vegetation evident through grazing and clearance / maintenance of vegetation in riparian zone.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 2		Natural bank form. Flooding where valley form allows. Valley form results in natural valley confinement for reach of Burn.
	R = 2		Natural bank form. Flooding where valley form allows. Valley form results in natural valley confinement for reach of Burn.
Σ Attribute scores	18		
Hydromorphology Score	0.56		
WFD class ^c	Moderate		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Pollanroe Burn Hydromorphology (PB-R2)

River name and location: Pollanroe Burn, Greencastle, Co. Tyrone

Date: 13th January 2025 and 6th August 2025

Photograph 1:
Channel with grazing to right bank



Photograph 2:
Farm access culvert over channel



Photograph 3:
Grazed land to channel



Photograph 4:
Grazed land to channel



Field Assessment of Morphological Condition

Site Code: Pollanroe Burn, Greencastle, Co. Tyrone

Date: 30th January and 6th August 2025

PB Reach 3 (500m): From Ford Crossing to top of Burn at Infrastructure Site.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Clear evidence of alteration to course e.g. straightening of channel and/or channel cross section, or significant removal of natural features on up to three quarters of reach. No sign of recovery of channel. Channel is narrow and has been straightened past bog area and along conifer plantation. Plantation area has been drained with small channels. Culvert under track at top end of reach. No floodplain as channel straightened across upper part.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	2		Channel is in peaty soils and is narrow. No in channel vegetation observed.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	0		<70% of reach natural. Channel straightened and excavated with homogenous channel bed in peaty subsoils, no substrate visible in channel.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	1		The ford at the downstream end of the reach is a man-made barrier to continuity and there is a small culvert under the track at the top end of the reach. Small cascade, c. 1m-2m in height in the middle of this reach which is a natural barrier to continuity. Score = 1 as presence of ford crossing and channel straightening.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0.5		Bank alteration of bank structure through straightening
	R = 0.5		Bank alteration of bank structure through straightening
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Coniferous plantation (CP) along upper part of reach which overhangs the Left Bank with disruption of native vegetation, no natural vegetation over channel.
	R = 0.5		Coniferous plantation (CP) along upper part of reach with disruption of native vegetation, no natural vegetation over channel.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		Peat vegetation along remainder of reach. Land used for rough grazing.
	R = 0.5		Coniferous plantation (CP) along upper part of reach with disruption of native vegetation. No natural vegetation over channel along length. Peat vegetation along remainder of reach. Land used for rough grazing.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0.5		Channel straightened and deepened no natural floodplain present along up to 75% of reach.
	R = 0.5		Channel straightened and deepened no natural floodplain present along up to 75% of reach.
Σ Attribute scores	8		
Hydromorphology Score	0.25		
WFD class ^c	Poor		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

HM Score = Σ Attribute scores/32

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Pollanroe Burn Hydromorphology (PB-R3)

River name and location: Pollanroe Burn, Greencastle, Co. Tyrone

Date: 13th January 2025 and 6th August 2025

Photograph 1:
Straightened channel long plantation



Photograph 2:
Straightened channel below plantation



Photograph 3:
Channel at downstream edge of valley mire



Photograph 4:
Channel downstream of valley mire



Photograph Detail Sheet – Pollanroe Burn Hydromorphology (PB-R3)

Photograph 5:
Channel downstream end of reach



Photograph 6:
Ford and culvert at downstream end of reach



Field Assessment of Morphological Condition

Site Code: Pollanroe Burn, Greencastle, Co. Tyrone

Date: 13th January and 6th August 2025

PB Reach 4 (500m): Tributary of Pollanroe Burn across western part of site.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE a,b	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Clear evidence of alteration to course including straightening of channel and culverting across c. 50% of the reach with removal of natural features.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	1		Straightening of channel and culverting across c. 50% of the reach with removal of channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	1		Presence of culverting and straightening has removed substrate over 50% of reach.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	1		Presence of culvert across 30% of reach is a significant barrier to continuity along this reach.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0.5		Clear evidence of alteration to bank structure on 50% of the bank length.
	R = 0.5		Clear evidence of alteration to bank structure on 50% of the bank length.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Approximately 30% of survey reach is covered by native vegetation. Bank vegetation lost across culvert and straightened section.
	R = 0.5		Approximately 30% of survey reach is covered by native vegetation. Bank vegetation lost across culvert and straightened section.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		Approximately 30% of survey reach is covered by native vegetation. Land grazed right up to channel in upstream part of reach. Bank vegetation lost across culvert and straightened section.

ATTRIBUTE	SCORE a,b	NV	COMMENTS
	R = 0.5		Approximately 30% of survey reach is covered by native vegetation. Land grazed right up to channel in upstream part of reach. Bank vegetation lost across culvert and straightened section.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0.5		Culverting and channel straightening across 50% of reach has removed floodplain.
	R = 0.5		Culverting and channel straightening across 50% of reach has removed floodplain.
Σ Attribute scores	8		
Hydromorphology Score	0.25		
WFD class ^c	Poor		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

HM Score = Σ Attribute scores/32

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Pollanroe Burn Hydromorphology (PB-R4)

River name and location: Pollanroe Burn, Greencastle, Co. Tyrone

Date: 13th January 2025 and 6th August 2025

Photograph 1:
Culverted section of channel



Photograph 2:
Channel with rough grazing to bank



Photograph 3:
Straighten section of burn



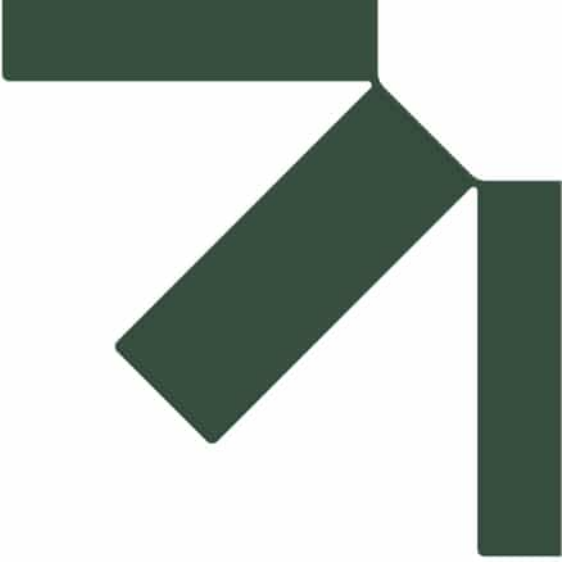
Photograph 4:
Animal poaching on straightened section of Burn



Photograph Detail Sheet – Pollanroe Burn Hydromorphology (PB-R4)

Photograph 5:
Lower section of Reach 4 downstream of culvert section with thick tree cover in incised channel valley





Appendix C Unnamed Burn Hydromorphology

Hydromorphology Assessment of Burns

Pollanroe Burn, Unnamed Burn, Glenealy Burn, Curraghinalt Burn and Attagh Burn, Co. Tyrone

Dalradian Gold Ltd.

SLR Project No.: 501.065025.00001

Field Assessment of Morphological Condition

Site Code: Unnamed Burn, Greencastle, Co. Tyrone

Date: 13th January and 6th August 2025

UB Reach 1 (500m): Upstream from Road at top of Burn.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Clear evidence of alteration to course with straightening of channel and channel cross section across two thirds of reach. No floodplain as channel straightened across upper part of reach Culvert under road at downstream end of reach. Remainder of channel is cascade pool in a ravine cut into the glacial till material.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	1		No in channel vegetation observed. No Woody Habitat present along or in channel and no leaf litter either. In channel vegetation is as expected given location of watercourse, management of channel and lack of woody habitat or leaf debris.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	3		Natural substrate for river type with bank erosion along ravine sides contributing range of sediment material to channel.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	1		Road culvert at the downstream end of the reach is a man-made barrier to continuity. Score = 1 as presence of culvert and channel straightening.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 0.5		Bank alteration of bank structure through straightening
	R = 0.5		Bank alteration of bank structure through straightening
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Patches of bare soil along ravine due to poaching by livestock and sections of ravine sides being eroded. Closely cropped vegetation along ravine sides from animal grazing.
	R = 0.5		Patches of bare soil along ravine due to poaching by livestock and sections of ravine sides being eroded. Closely cropped vegetation along ravine sides from animal grazing.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		Animal grazing of vegetation to channel bank with closely cropped vegetation along ravine sides.
	R = 0.5		Coniferous plantation (CP) along upper part of reach with disruption of native vegetation. No natural vegetation over channel along length. Peat vegetation along remainder of reach. Land used for rough grazing.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 0.5		Channel straightened and deepened no natural floodplain present along approximately across two thirds of reach.
	R = 0.5		Channel straightened and deepened no natural floodplain present along approximately across two thirds of reach.
Σ Attribute scores	10		
Hydromorphology Score	0.31		
WFD class ^c	Poor		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

$$\text{HM Score} = \Sigma \text{Attribute scores}/32$$

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Unnamed Burn Hydromorphology (UB-R1)

River name and location: Unnamed Burn, Greencastle, Co. Tyrone

Date: 13th January 2025 and 6th August 2025

Photograph 1:
Cascade pool section of burn



Photograph 2:
Channel with rough grasing to bank

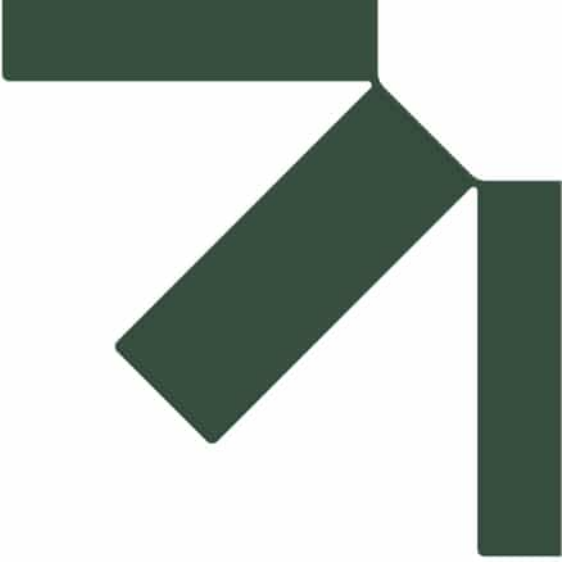


Photograph 3:
Steep valley sides to burn with eroding materials to channel



Photograph 4:
Top section of burn with straightened channel





Appendix D Glenealy Burn Hydromorphology

Hydromorphology Assessment of Burns

Pollanroe Burn, Unnamed Burn, Glenealy Burn, Curraghinalt Burn and Attagh Burn, Co. Tyrone

Dalradian Gold Ltd.

SLR Project No.: 501.065025.00001

Field Assessment of Morphological Condition

Site Code: Glenealy Burn, Greencastle, Co. Tyrone

Date: 30th and 31st January and the 7th August 2025

GB Reach 1 (500m): From confluence with the Owenkillew River.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	3		Channel form is natural except for a short section of channel, c. 80m length, on the valley floor of the Owenkillew River. Channel is a cascade step pool as well as being a bedrock channel in sections. Burn is located in a narrow and steep ravine which is between c. 5m and 40m deep with near vertical sides in places. Only small section of floodplain is present on the valley floor of the Owenkillew river. The channel planform, cross sections, bedform and flow types are natural for type of channel. Bridge structure at Camcosy Road
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	4		No in channel vegetation observed but Woody Habitat present along or in channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	4		Natural substrate for river type with bank erosion along ravine sides contributing range of sediment material to channel and with sections of bedrock channel.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		Only man-made barrier to continuity is Camcosy road and a short section of channel straightening on the valley floor of the Owenkillew River.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock.
	R = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Approximately 40% of bank covered by natural vegetation comprising hazel woodland overhanging the channel downstream of Camcosy Road. Remainder of channel is covered with coniferous trees. Alien species (Himalayan balsam) present over large stretch (35-75%) of survey area.
	R = 0.5		Approximately 40% of bank covered by natural vegetation comprising hazel woodland overhanging the channel downstream of Camcosy Road. Remainder of channel is covered with coniferous trees. Alien species (Himalayan balsam) present over large stretch (35-75%) of survey area.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		Approximately 40% of riparian land use is natural vegetation comprising hazel woodland downstream of Camcosy Road. Remainder of riparian land use upstream of the road is covered with coniferous trees.
	R = 0.5		Approximately 40% of riparian land use is natural vegetation comprising hazel woodland downstream of Camcosy Road. Remainder of riparian land use upstream of the road is covered with coniferous trees.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 2		Natural bank form given the type of channel and valley form which results in natural valley confinement.
	R = 2		Natural bank form given the type of channel and valley form which results in natural valley confinement.
Σ Attribute scores	25		
Hydromorphology Score	0.78		
WFD class ^c	Good		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

HM Score = Σ Attribute scores/32

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Glenealy Burn Hydromorphology (GB-R1)

River name and location: Glenealy Burn, Greencastle, Co. Tyrone

Date: 31st January 2025 and 7th August 2025

Photograph 1:
Valley floor of Owenkillev River and Burn.



Photograph 2:
Channel in natural woodland with bank erosion



Photograph 3:
Channel in natural woodland with invasive species



Photograph 4:
Channel in ravine section with coniferous plantation and valley side erosion



Photograph Detail Sheet – Glenealy Burn Hydromorphology (GB-R1)

Photograph 5:
Burn in deep ravine with coniferous plantation



Field Assessment of Morphological Condition

Site Code: Glenealy Burn, Greencastle, Co. Tyrone

Date: 30th and 31st January and 6th August 2025

GB Reach 2 (500m): Mid-section of Glenealy Burn.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	4		Channel form is natural. The channel planform, cross sections, bedform and flow types are natural for type of channel. Channel is a cascade step pool as well as being a bedrock channel in sections. Burn is located in a narrow and very steep ravine which is between c. 5m and 40m deep with near vertical sides in places.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	4		No in channel vegetation observed but Woody Habitat present along or in channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	4		Natural substrate for river type with bank erosion along ravine sides contributing range of sediment material to channel and with sections of bedrock channel.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No manmade barriers to continuity. There are a number of cascades in section which are between 2m to 3m in height which form natural barriers to continuity.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock.
	R = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Lower section of reach is covered with coniferous trees while the upper section is grazed grass vegetation to the channel bank.
	R = 0.5		Lower section of reach is covered with coniferous trees while the upper section is rough grazed grass vegetation to the channel bank.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		Riparian land use includes coniferous trees and rough grazed grass vegetation.
	R = 0.5		Riparian land use includes coniferous trees and rough grazed grass vegetation.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 2		Natural bank form given the type of channel and valley form which results in natural valley confinement.
	R = 2		Natural bank form given the type of channel and valley form which results in natural valley confinement.
Σ Attribute scores	26		
Hydromorphology Score	0.81		
WFD class ^c	High		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

$$\text{HM Score} = \Sigma \text{Attribute scores}/32$$

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Glenealy Burn Hydromorphology (GB-R2)

River name and location: Glenealy Burn, Greencastle, Co. Tyrone

Date: 30th January 2025 and 6th August 2025

Photograph 1:
Ravine section of burn with sediment input from ravine sides



Photograph 2:
Bedrock cut channel section in ravine



Photograph 3:
Channel with rough grazing and rushes to channel bank



Photograph 4:
Cascade pool section with bedrock



Field Assessment of Morphological Condition

Site Code: Glenealy Burn, Greencastle, Co. Tyrone

Date: 30th and 31st January and the 6th August 2025

GB Reach 3 (500m): Top section of Glenealy Burn.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE _{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	4		Channel form is natural. The channel planform, cross sections, bedform and flow types are natural for type of channel. Channel is a cascade step pool with small sections of channel in bedrock. Burn is located in a small ravine with no floodplain. Upper channel section is on peat and comprises rushes flows/seepages through vegetation. Small culvert (pipe) section at downstream end of reach.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	4		No in channel vegetation observed, no Woody Habitat present along or in channel. Upper channel section is on peat and comprises rushes flows/seepages through vegetation.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	4		Natural substrate for river type with bank erosion along ravine sides contributing range of sediment material to channel and with short sections of bedrock channel.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		Small culvert (pipe) section at downstream end of reach otherwise no other manmade barriers present. There are a number of cascades in section which are between 2m to 3m in height which form natural barriers to continuity.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock. Along peat sections of channel bank is natural condition.
	R = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock. Along peat sections of channel bank is natural condition.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Vegetation comprises grazed grass vegetation to the channel bank.
	R = 0.5		Vegetation comprises grazed grass vegetation to the channel bank.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		Riparian land use comprises rough grazed grass vegetation with rushes in upper section. Grazed along full length of reach.
	R = 0.5		Riparian land use comprises rough grazed grass vegetation with rushes in upper section. Grazed along full length of reach.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 2		Natural bank form given the type of channel and valley form which results in natural valley confinement.
	R = 2		Natural bank form given the type of channel and valley form which results in natural valley confinement.
Σ Attribute scores	26		
Hydromorphology Score	0.81		
WFD class ^c	High		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

$$\text{HM Score} = \Sigma \text{Attribute scores}/32$$

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Glenealy Burn Hydromorphology (GB-R3)

River name and location: Glenealy Burn, Greencastle, Co. Tyrone

Date: 30th January 2025 and 6th August 2025

Photograph 1:
Ravine section of burn with channel in bedrock



Photograph 2:
Bedrock section with cascade pool channel type

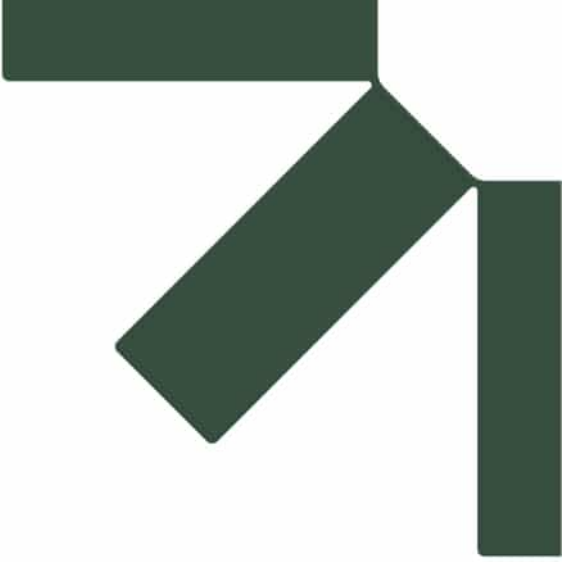


Photograph 3:
Channel with rough grazing and rushes to channel bank



Photograph 4:
Upper channel with rough grazing and rushes





Appendix E Curraghinalt Burn Hydromorphology

Hydromorphology Assessment of Burns

Pollanroe Burn, Unnamed Burn, Glenealy Burn, Curraghinalt Burn and Attagh Burn, Co. Tyrone

Dalradian Gold Ltd.

SLR Project No.: 501.065025.00001

Field Assessment of Morphological Condition

Site Code: Curraghinalt Burn, Greencastle, Co. Tyrone

Date: 14th January and the 7th August 2025

GB Reach 1 (500m): From confluence with the Owenkillew River.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	2		Channel form is natural except for a section of channel, c. 150m length, below the Camcosy Road Bridge where the channel passes the farmyard and farm access track. Channel is a cascade step pool as well as being a bedrock channel in sections. Bridge structure at Camcosy Road. Across the majority of this reach the channel planform, cross sections, bedform and flow types are natural for type of channel.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	4		No in channel vegetation observed but Woody Habitat present along or in channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	4		Natural substrate for river type with some small sections of bank erosion contributing range of sediment material to channel and with sections of bedrock channel.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		Only man-made barrier to continuity is the culvert at the Camcosy Road and a short section of channel straightening on the farm yard and farm access track.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock.
	R = 0.5		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock. Section of modified bank at the farmyard and farm access track where the bank has been altered and protected against erosion.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 1.5		Bank covered by natural vegetation comprising hazel woodland overhanging the channel. A small amount of Himalayan balsam alien species present (<15% bank area)
	R = 1		Approximately 70% of bank covered by natural vegetation comprising hazel woodland overhanging the channel. Section of modified bank at the farmyard and farm access track where vegetation removed and managed. A small amount of Himalayan balsam alien species present (<15% bank area)
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		Land use comprises natural woodland along lower section and the Adit site infrastructure.
	R = 0		No riparian buffer zone. Lands for grazing, farm access track and farmyard up to bank of burn.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 2		Natural bank form given the type of channel with no artificial barrier to over bank flooding where valley form allows.
	R = 0.5		Bank works along c. 150m section below Camcosy Road at farmyard and access track prevents out of bank flooding.
Σ Attribute scores	22		
Hydromorphology Score	0.69		
WFD class ^c	Good		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

$$\text{HM Score} = \Sigma \text{Attribute scores}/32$$

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Curraghinalt Burn Hydromorphology (CB-R1)

River name and location: Curraghinalt Burn, Greencastle, Co. Tyrone

Date: 14th January 2025 and 7th August 2025

Photograph 1:
Cascade pool channel in bedrock



Photograph 2:
Cascade pool channel in bedrock with
hazel trees



Photograph 3:
Protected channel bank along farm access
track



Photograph 4:
Modified channel bank to farmyard



Field Assessment of Morphological Condition

Site Code: Curraghinalt Burn, Greencastle, Co. Tyrone

Date: 14th January and the 6th August 2025

GB Reach 2 (500m): Upstream of Camcosy Road.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	4		Channel form is natural with no modifications. Channel is a cascade step pool as well as being a bedrock channel in sections. Cascade sections are up to 5m in height. Channel is set in ravine cut into the glacial till material and is up to c. 30m deep at locations. The channel planform, cross sections, bedform and flow types are natural for type of channel.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	4		No in channel vegetation observed but Woody Habitat present along lower section of reach channel.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	4		Natural substrate for river type with some sections of bank erosion contributing range of sediment material to channel and with sections of bedrock channel.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No manmade barriers to continuity. A number of cascades on the channel form natural barriers.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock.
	R = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Banks covered by grass and rushes which are grazed.
	R = 0.5		Banks covered by grass and rushes which are grazed.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		No riparian buffer zone. Lands grazed wit short grass and rushes.
	R = 0.5		No riparian buffer zone. Lands grazed wit short grass and rushes.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 2		Natural bank form given the type of channel with no artificial barrier to over bank flooding where valley form allows.
	R = 2		Natural bank form given the type of channel with no artificial barrier to over bank flooding where valley form allows.
Σ Attribute scores	26		
Hydromorphology Score	0.81		
WFD class ^c	High		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

$$\text{HM Score} = \Sigma \text{Attribute scores}/32$$

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Curraghinalt Burn Hydromorphology (GB-R2)

River name and location: Curraghinalt Burn, Greencastle, Co. Tyrone

Date: 14th January 2025 and the 6th August 2025

Photograph 1:
Deep ravine section above Camcosy Road



Photograph 2:
Cascade pool channel in bedrock



Photograph 3:
Cascade pool channel in bedrock with grazing to bank



Photograph 4:
Channel in ravine with livestock poaching at bank



Field Assessment of Morphological Condition

Site Code: Curraghinalt Burn, Greencastle, Co. Tyrone

Date: 14th January and 6th August 2025

GB Reach 3 (500m): Upper section of Burn.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	4		Channel form is natural with no modifications. Channel is a cascade step pool. Cascade sections are up to c 1m in height. Channel is set in small ravine cut into the glacial till material and is up to c. 5m deep at locations. The channel planform, cross sections, bedform and flow types are natural for type of channel. Upper sections of reach the channel is in peat.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	4		No in channel vegetation observed and no Woody Habitat present. Rushes dominate in upper sections of reach the channel is in peat.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	4		Natural substrate for river type with some sections of bank erosion contributing range of sediment material to channel and with sections of bedrock channel.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	4		No manmade barriers to continuity.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 2		Banks are in natural condition with some erosion in glacial till where present.
	R = 2		Banks are in natural condition with some erosion in glacial till where present.
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Banks covered by grass and rushes which are grazed.
	R = 0.5		Banks covered by grass and rushes which are grazed.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		No riparian buffer zone. Lands grazed with short grass and rushes.
	R = 0.5		No riparian buffer zone. Lands grazed with short grass and rushes.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 2		Natural bank form given the type of channel with no artificial barrier to over bank flooding where valley form allows.
	R = 2		Natural bank form given the type of channel with no artificial barrier to over bank flooding where valley form allows.
Σ Attribute scores	26		
Hydromorphology Score	0.81		
WFD class ^c	High		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

$$\text{HM Score} = \Sigma \text{Attribute scores}/32$$

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Curraghinalt Burn Hydromorphology (GB-R3)

River name and location: Curraghinalt Burn, Greencastle, Co. Tyrone

Date: 14th January 2025 and the 6th August 2025

Photograph 1:
Channel with rough grazing and rushes to bank



Photograph 2:
Channel with rough grazing and rushes to bank



Photograph 3:
Channel with rough grazing and rushes



Photograph 4:
Channel in ravine natural bedload material



Appendix F Attagh Burn Hydromorphology

Hydromorphology Assessment of Burns

Pollanroe Burn, Unnamed Burn, Glenealy Burn, Curraghinalt Burn and Attagh Burn, Co. Tyrone

Dalradian Gold Ltd.

SLR Project No.: 501.065025.00001



Field Assessment of Morphological Condition

Site Code: Attagh Burn, Greencastle, Co. Tyrone

Date: 31st January and 7th August 2025

AB Reach 1 (500m): From confluence with the Owenkillew River to below Camcosy Road.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	1		Channel section which runs along aside the farm access road and through the farmyard has been modified and straightened in sections with culvert under access road. There is a section of bank protection along access road as well as two fords, one of which is in the farmyard. Modified channel cross sections. Channel from farm access road to Camcosy road is natural channel comprising a cascade step pool as well as being a bedrock channel in sections. Channel cross sections, bedform and flow types natural for type of channel.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	2		No in channel vegetation observed but Woody Habitat present along or in channel along all sections of reach. Management of vegetation along farm access rack and at farmyard.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	4		Natural substrate for river type with some small sections of bank erosion contributing range of sediment material to channel and with sections of bedrock channel.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	1		Man made barriers to continuity includes two fords and culvert under access road.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock.
	R = 0.5		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock. Section of modified bank along farm access track where the bank has been altered and protected against erosion.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 1.5		Bank covered by natural vegetation comprising hazel woodland overhanging the channel. A small amount of Himalayan balsam alien species present (<15% bank area) at the downstream end between the farmyard and the Owenkillew River.
	R = 1		Approximately 50% of bank covered by natural vegetation comprising hazel woodland overhanging the channel. Section of modified bank along the farm access track where vegetation removed and managed. A small amount of Himalayan balsam alien species present (<15% bank area) at the downstream end between the farmyard and the Owenkillew River.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		Land use comprises farmyard and improved land for grazing with natural woodland along upper section of the reach, below Camcosy Road.
	R = 0.5		Land use comprises farmyard, farm access road and improved land for grazing with natural woodland along upper section of the reach, below Camcosy Road.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 2		Natural bank form given the type of channel with no artificial barrier to over bank flooding where valley form allows.
	R = 0.5		Bank works along farm access road and at farmyard prevents out of bank flooding.
Σ Attribute scores	16.5		
Hydromorphology Score	0.52		
WFD class ^c	Moderate		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

$$\text{HM Score} = \Sigma \text{Attribute scores}/32$$

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Attagh Burn Hydromorphology (AB-R1)

River name and location: Attagh Burn, Greencastle, Co. Tyrone

Date: 13th January 2025 and 7th August 2025

Photograph 1:
Burn ford at farmyard with cascade on downstream side



Photograph 2:
Channel bank protection along farm access road



Photograph 3:
Steep ravine section with cascade over bedrock



Photograph 4:
Channel in ravine natural bedload material



Field Assessment of Morphological Condition

Site Code: Attagh Burn, Greencastle, Co. Tyrone

Date: 31st January and 6th August 2025

ABB Reach 2 (500m): From Camcosy Road upstream.

Use the completed field form sections identified below to assess the percentage modified and assign a score using the scoring system

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
1. Channel morphology and flow types B. substrate, flow types and modifications, F. Channel modifications, G. Re-naturalisation and K. Natural features.	2		Natural channel with major culvert under Camcosy Road. Upper parts of the reach comprise narrow channel sections of which are straightened and are in peat. Where natural, the channel comprises a cascade step pool as well as being a bedrock channel in sections. The channel planform, cross sections, bedform and flow types are natural for type of channel.
2. Channel Vegetation Sheet 1. Channel maintenance and dredging, B. Channel modifications, C. Channel vegetation present, Bank face vegetation structure, D. Bank face and bank top vegetation structure, H. Extent of trees, J. Habitat structure features, K. Marginal and bank features (tree roots), and L. Resource use Navigation.	2		No in channel vegetation observed but Woody Habitat present along or in channel along upstream from Camcosy Road. Rushes dominate in upper sections of reach including where the channel is in peat.
3. Substrate condition Sheet 1. Channel maintenance or dredging, B. Channel substrate and channel modifications, E. Channel structures, F. Channel modifications, K. Substrate and Natural Features, L. Resource Use – Rail or Navigation.	4		Natural substrate for river type with sections of bank erosion contributing range of sediment material to channel and with sections of bedrock channel.
4. Barriers to continuity Sheet 1. Desk top GIS observations, B. Channel substrate artificial or silt, channel modifications, and L. Resource use (Mill, DAM or HEP).	1		Man made barrier to continuity is culvert under the Camcosy Road.
5. Bank structure & stability L/R B. Bank material, modifications and height to width ratio, E. Channel structures, G. Bank modifications, K. Marginal and Bank features and L. Deflectors, jetties and road or trail.	L = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock or peat.
	R = 2		Banks are in natural condition with erosion in glacial till where present and stable banks where channel is in bedrock or peat.

ATTRIBUTE	SCORE ^{a,b}	NV	COMMENTS
6. Bank vegetation L/R D. Bank top vegetation structure, bank face vegetation structure, H. Extent and variety of trees, I. Bank non natives/disturbance species. J. Habitat structure features.	L = 0.5		Bank covered by natural vegetation comprising birch woodland overhanging the channel immediately upstream of Camcosy Road. Grazing up to bank along remainder of reach with rushes also.
	R = 0.5		Bank covered by natural vegetation comprising birch woodland overhanging the channel immediately upstream of Camcosy Road. Grazing up to bank along remainder of reach with rushes also.
7. Riparian land use L/R Desk top riparian land cover types, D. Bank top land use/land cover, and L. Resource Use.	L = 0.5		No riparian buffer zone. Lands grazed with short grass and rushes along majority of each.
	R = 0.5		No riparian buffer zone. Lands grazed with short grass and rushes along majority of each.
8. Floodplain connectivity L/R Desktop Rivers Agency designation, Field notes overall valley form, B. Bank Material and modifications, channel modifications, bankfull height: width ratio, F. Channel modifications, and G. Bank Modifications.	L = 2		Natural bank form given the type of channel with no artificial barrier to over bank flooding where valley form allows.
	R = 2		Natural bank form given the type of channel with no artificial barrier to over bank flooding where valley form allows.
Σ Attribute scores	19		
Hydromorphology Score	0.59		
WFD class ^c	Moderate		

^a Attributes 1-4 scored from 0 to 4 by 1; Attributes 5-8 score LB / RB separately 0 to 2 by 0.5

^b If attribute can't be scored, tick NV box and enter provisional score of 2 for attributes 1-4 or 1 for attributes 5-8

^c WFD Class	HM Score	Σ Att Scores	General Comments
High	≥0.8	≥26	eg how to bring to Good Hydromorphological data status
Good	0.6 - <0.8	≥19.5 to <26	
Moderate	0.4 - <0.6	≥13 to <19.5	
Poor	0.2 - <0.4	≥6.5 to <13	
Bad	<0.2	<6.5	

$$\text{HM Score} = \Sigma \text{Attribute scores}/32$$

River Hydromorphology Assessment - Photographs

Photograph Detail Sheet – Attagh Burn Hydromorphology (AB-R2)

River name and location: Attagh Burn, Greencastle, Co. Tyrone

Date: 13th January 2025 and the 6th August 2025

Photograph 1:
Channel with bank erosion and natural bedload material



Photograph 2:
Channel with grazing and rushes to bank



Photograph 3:
Channel with eroded banks and sediment input to channel



Photograph 4:
Straightened section of burn channel with small, piped culvert





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